The Builder.

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The Dangers of Hot-Water Heating Apparatus.

NOW that winter is once more approaching it may be of service to reconsider the dangers attaching to apparatus for heating buildings by hot water. The subject is not a new one, but attention to it is necessary so long as accidents continue to occur; it can, moreover, be illustrated by examples which have not yet received adequate notice in our columns. Last winter was so mild that not a single heating apparatus boiler, we believe, exploded in this country in consequence of frost; we must, therefore, turn to the winter of 1896-7 for our illustrations.

While thus insisting on grave dangers arising from frost, we do not lose sight of the fact that accidents may occur to hot-water heating apparatus even in mild weather, and an example of this kind will shortly be given; but we shall be within the mark if we say that nine out of every ten accidents are directly due to frost, and it is for this reason that special attention will now be devoted to explosions occurring when some portion of the apparatus is rendered inoperative by reason of the contained water being frozen into solid ice. Without entering into any rivalry with "Old Moore," we may also utter a word of warning to the effect than in all probability the coming winter will be characterised by severe frosts, and that therefore great care should be exercised by all persons in charge of hot-water heating apparatus; certainly it would be strange to have two such mild winters in succession.

On November 30, 1896, the boiler of a low-pressure heating apparatus, used for warming a portion of Brookfield Mill, at Kirkburton, near Huddersfield (Yorkshire), exploded, and was projected, by the force of the explosion, a distance of 30 ft., tearing up the warming pipes, demolishing the brick chamber in which it had been placed, wrecking a wooden shed against which it fell, and killing the foreman of the works. The boiler was only thirteen months old, and was of the saddle type, as shown in fig. 1, constructed of $\frac{3}{8}$ in. wrought-iron plates welded together; it measured 3 ft. 6 in. from front to back, 2 ft. 2 in. in width, and 2 ft. 6 in. in height. The back of the boiler was blown off by the explosion, giving way at the weld, and being bent into a concavo-convex form, while the sides of the boiler near the back were also distorted.

On January 18, 1897, a heating boiler at the Sandell Works, 215, Selhurst-road, South Norwood, London, S.E., exploded after having been in use only one winter. The brick house, in which the boiler was placed, was completely demolished, as well as the boiler itself, and one man was severely injured. This boiler was of less common form, the water-way being an annular chamber of peculiar shape and of small size, as shown in fig. 2; the extreme outside dimensions were only $19\frac{3}{4}$ in. by $13\frac{1}{4}$ in., and $9\frac{7}{8}$ in. deep, while the water space was only $1\frac{1}{2}$ in. wide and $7\frac{7}{8}$ in. deep. The boiler was of cast-iron about $\frac{3}{8}$ in. thick. As might have been expected from the nature of the material, the explosion burst the boiler into a number of fragments.

A third case occurred at six a.m. on Sunday, January 24, 1897, at the Prospect Primitive Methodist Chapel, Swindon (Wiltshire). This again, as shown in fig. 3, was a saddle boiler, but of simpler form than that at Kirkburton, but was about the same age, having been fixed new in January, 1895. The dimensions were: length, 3 ft.; width, 1 ft. 10 in.; height, 1 ft. 7 in. The outer and inner plates of the saddle were $\frac{5}{16}$ in. thick, welded together at the bottom curves, and the end plates were $\frac{3}{8}$ in. thick, welded to the saddle plates. The explosion lifted the boiler from its seat and projected it through the floor of the vestry above, whence it fell back almost to its original position. Strange to say, the attendant, who was standing in front of the boiler at the time, escaped with comparatively trifling injuries. This appears to have been due to the plates yielding at the bottom, as indicated in the figure, and projecting the boiler almost vertically. Had the explosion been of the kind shown in fig. 1, the man's life would probably have been lost and the damage to the buildings would have been much more serious.

The apparatus in each case appears to have been good of its kind, as far as it went, but in none were any special precautions, except the provision of draw-off cocks, taken to prevent such accidents. The flow and return pipes were properly connected; the pressure due to the head of water was in two of the cases only 3 lbs. per square inch, and in the third only about $6\frac{3}{4}$ lbs.; air-pipes were carried from the highest parts of the circulation-pipes to points above the supply-cisterns in two, at least, of the cases; and a draw-off cock was provided in close proximity to each boiler. The boilers were made by three different makers, whose names need not be mentioned, as the fault of the explosions does not rest with them. Two of the boilers were of wrought iron, and one of cast iron, while all three were more or less different in shape and construction. All the apparatus were on the low-pressure system, which is usually considered so much safer than the high-pressure.

The cause of explosions occurring on such dates as November 30, January 18, and January 24, need hardly be stated. In each case frost was the cause, the water in the circulation-pipes being frozen at one or more points. When this occurs and a fire is lit under the boiler, one of two things must happen (unless special precautions have been taken): (1) The ice will be melted or broken up by the increasing pressure of the heated water, or (2) the boiler or its connexions will burst. The possibility of the former alternative happening is small, if any considerable portion of the pipes has been blocked with ice. At South Norwood the block evidently occurred in the 6-ft. lengths of flow and return which passed *uncovered* in the open air between the boiler-chamber in the back-yard of the house and the room to be warmed. The distance of the ice from the boiler appears to have been less than 10 ft., and yet the boiler burst before the ice could be melted. When there is no circulation of water in the pipes, the water in them can only be warmed by conduction, which is a very slow process indeed, so slow that, were the block within a yard of the boiler, the probability is that the boiler would burst before the ice could be melted or broken up. With respect to the apparatus at Kirkburton and Swindon, we are not told how far the frozen pipes were from the boiler, but far or near makes very little difference.

And now a word or two as to the days on which the explosions occurred. That at the Swindon Chapel occurred on a *Sunday*, the

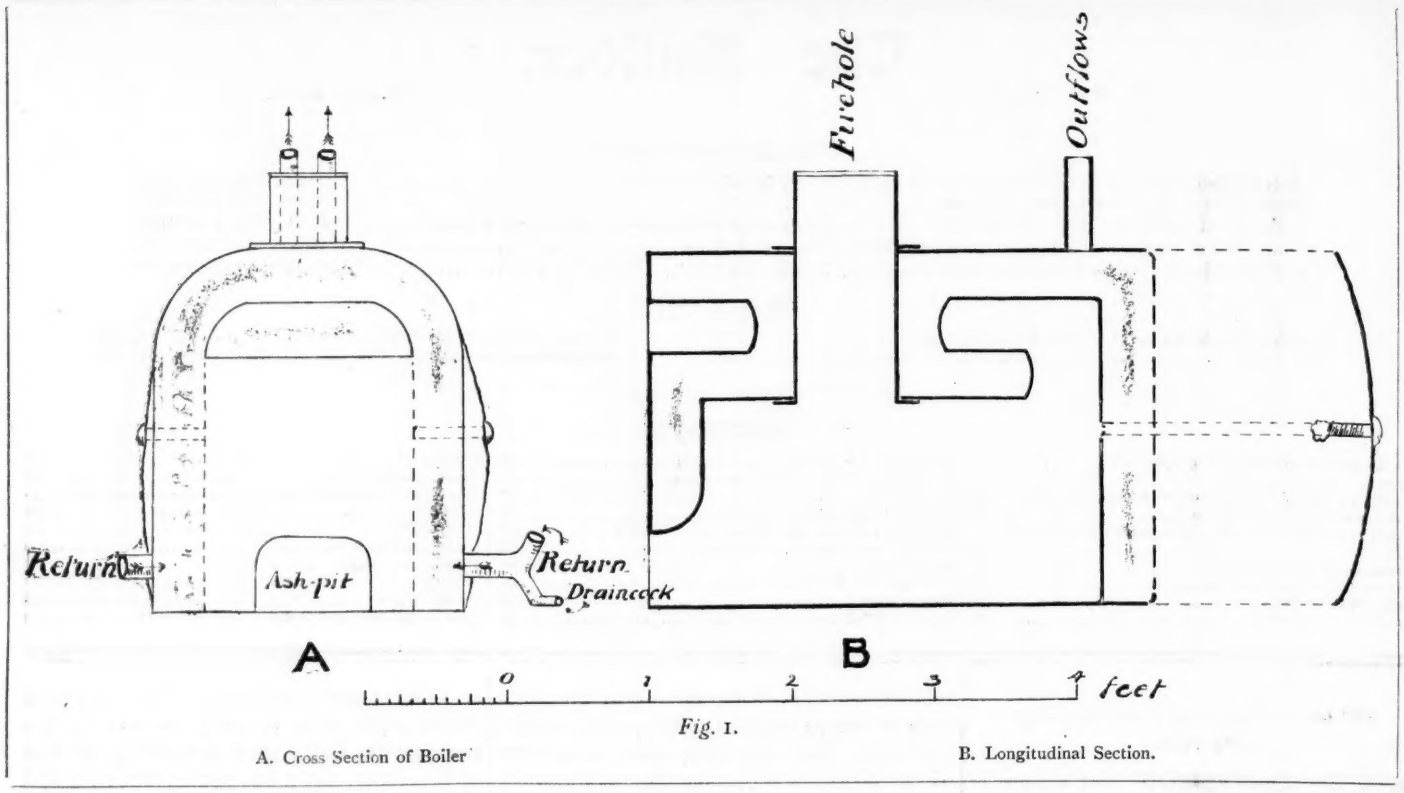

Fig. 1.

A. Cross Section of Boiler B. Longitudinal Section.

pipes having been left full of water during the previous week, *while the fire had been allowed to die out* on the previous Sunday or Monday. At Brookfield Mill, Kirkburton, the explosion occurred on a *Monday*, the pipes having been left full of water from the previous Friday, when the fire had been allowed to go out. At the works at South Norwood also, the accident was on a Monday, but here the fire had only gone out on the Saturday before; it must be remembered, however, that in this case, the pipes passed for a length of 6 ft., through the open air, and were not protected in any way from the effects of the external temperature. Thus we have three explosions, one occurring after seven days' disuse of the apparatus, another after three days', and the third after only two days'.

At South Norwood the fact that the pipes were frozen does not appear to have been known; but at Kirkburton the attendant, after lighting the fire, suspected that something was the matter with the circulation, and called the foreman to examine the boiler, &c., while he went for a bucket of hot water to thaw the frozen pipes; before his return the boiler exploded and the foreman was killed. That neither the attendant nor the foreman had the common sense to rake out the fire immediately on discovering that the circulation was stopped, shows either their deadly ignorance or their unfortunate lack of that inestimable quality, presence of mind. The attendant at the Swindon chapel was avowedly ignorant of the dangers of the apparatus he was supposed to control. Before lighting the fire he noticed—to quote the report—"that the supply-tank was frozen, and thought that the water in the circulating pipes was also frozen; *but he did not know there was any danger in lighting the fire under such circumstances.*"* Such ignorance in a person placed in a responsible position is most culpable, and perhaps the greater part of the blame for the accident should rest upon those who appointed such a man to the post.

What lessons can be learnt from the examples given? Here are three boilers, different in size, shape, and material, all nearly new and in good condition, but all destroyed because the increasing pressure of the water, as it became more and more heated, could find no other way of escape. The explosion might, in every case, have been prevented either by drawing off the water when the fires were allowed to die out, or by keeping a small fire burning continuously, so that the water would always be warm and in motion. Explosions might also have been prevented by raking out the fires as soon as it was noticed that a proper circulation had not been set up. These are matters of attendance pure and simple, and every person in charge of a heating apparatus should be aware of these elementary rules.

But the construction of the apparatus was far from perfect, as not one of the boilers possessed a safety-valve. It is sometimes said that safety-valves are of no use, and certainly too much reliance may be placed upon them, but it is a simple fact that safety-valves have very often indeed prevented explosions. It is argued that the valve itself may be frozen fast. It may be, but being near the boiler, which will retain its heat longer than any other part of the apparatus—particularly if it is of the saddle type and encased with brickwork—the valve is less likely to be frozen than other parts; moreover, being so near the boiler (for it should be fixed as close to it as possible), and containing so little water or ice, it will be more quickly melted. A valve, moreover, furnishes an easy method of ascertaining the condition of the apparatus, especially if it is of the dead-weight type, as, in our opinion, all such valves should be.. It would soon become a habit of the attendant to lift some of the rings of the valve before lighting the fire; if the water continued to run for some time, he might know that a fire would not be likely to do any harm, but if, on the other hand, water did not flow, he might be certain that something was wrong, and that a fire would be a source of grave danger.

Instead of a safety-valve, a plate of mica or other material may be fitted in the boiler, if this is not encased in brickwork, care being taken that the *breaking-strength* of the material is well within the safe *working-strength* of the boiler itself. Any undue pressure in the boiler will then be relieved by bursting the plate of mica or other material, leaving the boiler itself and its surroundings intact. In fixing such a safety-plate, care must be observed to fix it so that the escaping water, in the case of an explosion, cannot possibly reach the attendant; otherwise, he might be seriously scalded. Another danger to be feared in connexion with hot-water apparatus is when stop-valves are fixed on the flow-pipes to prevent the circulation of water in some portion of the building. In the chapel at Swindon, two $1\frac{1}{2}$-in. flow-pipes were taken from the top of the boiler, one for warming the chapel and the other for the school, and on each a stop-valve was fixed. If by any chance both these valves should be closed, while a fire is burning under the boiler, the only escape for the increasing pressure in the latter (in cases where safety-valves are not provided), will be through the air-pipes at the uppermost points of the circulation, or through the supply-pipe and tank. Sometimes air-cocks are fixed instead of air-pipes, and are, of course, always closed when the apparatus is in use; in such a case, the only escape for the pressure is through the supply-pipe and tank, and a stoppage in this (whether by ice or any other substance) must lead to an explosion. Where the attendant is as ignorant as the one at the Swindon chapel, an explosion may in this way be brought about, even though the circulation-pipes are entirely free from ice or deposit.

Attention must also be drawn to the culpable carelessness shown in fixing hot-water pipes, as at South Norwood, in the open air, or, indeed, in any exposed position, without covering them with slag-wool or other non-conducting material.

It appears to us that every person fixing a hot-water heating apparatus should be compelled to fix on the boiler a suitable safety-valve or plate, and to provide for the boiler-chamber a danger notice, and that every person or persons owning the apparatus

* The italics are ours.

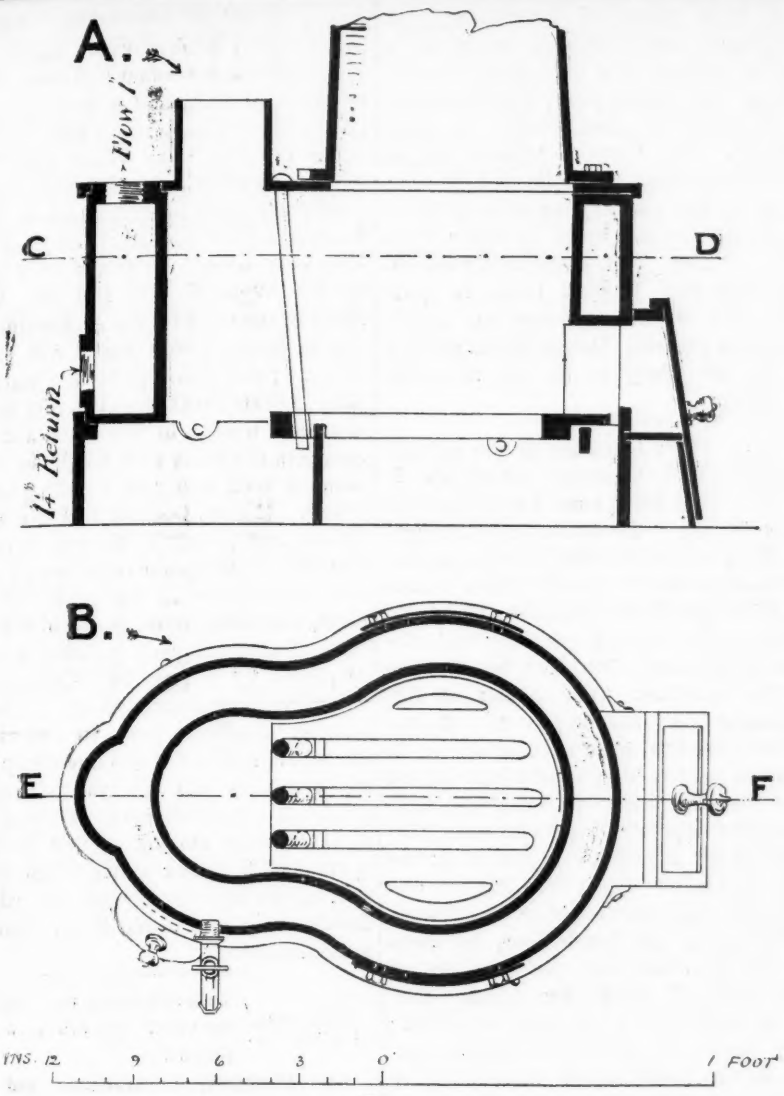

Fig. 2.

A. Section of Boiler. B. Plan of Boiler. C—D. Section at E F on Plan.

apparatus itself. The installation was completed in the latter part of the previous year, and consisted of about 2,365 ft. of butt-welded wrought-iron pipes, with an internal diameter of $\frac{3}{8}$ in. and an external diameter of $1\frac{5}{16}$ in. The boiler was formed with coils of similar piping, about 265 ft. in all, enclosed in an iron casing lined with brickwork. The fire was lit about six o'clock on the morning of the accident, and the damper was not closed until a quarter-past eleven. Almost immediately the explosion occurred with "a loud report." The damage done was only trifling, being simply the bursting of one of the pipes on the ground floor of the church, but as it was followed by the rising of volumes of steam in the building, the wonder is that a panic was averted.

At the preliminary inquiry, held on behalf of the Board of Trade, it was stated that the apparatus had been tested on its completion in November, 1895, to a pressure of 2,000 lbs. per square inch, and that the makers did not anticipate that the working pressure would ever exceed 250 lbs. per square inch. On being tested by the Inspector, however, the pressure was found to reach 500 lbs. per square inch with only three hours' firing; and it was "still rising when the fire was checked." Fortunately, explosions of this kind are exceedingly rare, but, in the words of the Inspector, "the necessity is shown for frequently testing such pipes by hydraulic pressure, and making a forced fire-test to ascertain the maximum pressure obtainable in them before apparatuses of this description are set to work."

should be held responsible for the maintenance of such a notice in a conspicuous position. As a contribution to this important subject, we venture to suggest the following form of notice:—

DANGER.

TO PREVENT EXPLOSIONS, with their accompanying injuries to life and property, *the attendant* must, during the winter months, either

KEEP THE FIRE CONSTANTLY BURNING EVERY DAY AND NIGHT (a small fire will suffice when the apparatus is not required), or

DRAW OFF THE WATER IN THE BOILER AND PIPES *immediately after raking out the fire*, the ball-cock in the supply-tank being first fastened up, or the supply of water to the tank turned off by the stop-cock.

IF THE FIRE ACCIDENTALLY GOES OUT, the water not having been drawn off, care must be taken, before relighting the fire, to ascertain (1) whether the water in the supply-tank or in the pipes leading to or from it is frozen, (2) whether the safety-valve is frozen fast, and (3) whether the water in the circulation-pipes is frozen (this is most important and can be ascertained by fastening up the ball-cock in the supply-cistern, and running the water out of the boiler and pipes for some time); the ice in the pipes, &c., must be melted before lighting the fire.

If, after lighting the fire, circulation is imperfect, the attendant must AT ONCE RAKE OUT THE FIRE, and must then, and not till then, proceed to examine the apparatus, in order to discover the cause.

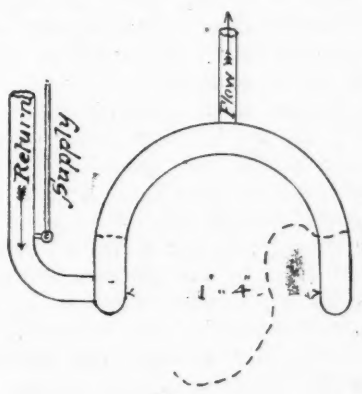

Fig. 3.

BEFORE LIGHTING THE FIRE AT ANY TIME the attendant must see that at least one circulation of pipes has its stop-valve open.

N.B.—It is possible for pipes to be blocked by *incrustation or deposits* as well as by frost, and the attendant must take all care to ascertain if this is likely to happen, and be prepared to act as in the case of frost.

The three apparatus which have been described were all of the low-pressure type, and in each case the explosion was due to frost. Explosions in high-pressure apparatus may also be caused by the same agency, but none appears to have been thus caused during the winter of 1896-7. The sole explosion of high-pressure apparatus was that which occurred on Sunday, November 7, 1896, at Marylebone Presbyterian Church, London, and this was due to a defect in the

NOTES.

The "Beaux-Arts" Election.

THE French Académie des Beaux-Arts met on Saturday last to elect a successor to M. Garnier in the architectural section. At first M. Guadet had nearly all the votes, but in the process of the curious French system of "Tour de scrutin," which seems intended to give people an opportunity to change their minds after they have begun voting, after four turns M. Moyaux, "Inspecteur-Général des Bâtiments Civils," was elected by nineteen out of thirty-six votes; the remaining votes being distributed among MM. Guadet, Laloux, Girault, and Scellier de Gisors. The new Academician was born at Anzin in 1835; he became a pupil of Hippolyte Lebas, and obtained the Prix de Rome in 1861. He is an officer of the Legion of Honour and a Professor at the Ecole des Beaux-Arts. Among his principal works are the monumental fountain at Anzin, the tomb of Léon Cogniet, and the observatory at Meudon; and he was the successful competitor for rebuilding the Cour des Comptes. We presume therefore that M. Moyaux is a capable man, though it will seem rather odd to English architects that the election should have fallen on an architect little known out of France, over the head of a man of such world-wide reputation as M. Guadet; and indeed all the three other candidates are better known on this side of the Channel than the successful one.

Building Regulations in the Country.

THE correspondence in the *Times* upon the subject of Building Regulations in the Country has shown pretty clearly that some of the by-laws are really not suited to purely rural districts. There is no doubt also that in many places, and in many instances, local

by-laws are more honoured in the breach than the observance, that they are not properly enforced, and that they are often of such a character that to enforce them would be unreasonable. The fact is that the whole subject requires investigation and consideration. It is undesirable that by-laws should be too elaborate. They should be simple and they should be enforced. Indeed, all over the rural districts of England, what is really most needed is a vigorous enforcement of existing sanitary regulations; hundreds of instances of inefficient sanitary supervision may be seen all over the country; in many cases sanitary inspectors in rural districts will hardly make an investigation or a report until they have been pressed to do so.

The Royal Commission on Sewage Disposal.

LORD IDDESLEIGH, the Chairman of the Royal Commission on Sewage Disposal, has addressed a naïve letter to the Press, in which he states that the Commission has learned that there is a tendency on the part of some manufacturers and Local Authorities to postpone the carrying out of works for sewage disposal pending the Report of the Commission. He adds that such postponement would be viewed by the Commission "with the gravest concern." He further states—what was unnecessary, since every one knows the length of time which Royal Commissions take over investigations—that some years must elapse before any final report is made. We fear that this letter might just as well have not been written. As we said when the Commission was appointed, some Local Authorities and manufacturers would certainly take advantage of it to postpone various necessary works. Such postponements will still go on, and there is a certain reason in them. It is quite possible that a Local Authority may carry out some scheme which the Commission may ultimately condemn; and it is natural that Local Authorities should not desire to spend public money whilst, rightly or wrongly, there is uncertainty as to the best principles of sewage disposal. We should much prefer that Lord Iddesleigh would make up his mind to investigate the subject rapidly and make a report within a definite time. A year would be quite long enough for the work of this Commission.

"Anglo-Indian Architecture."

IN regard to the Note which appeared on this subject in our last issue (page 358), Mr. F. W. Stevens, who we find is in England at present, while quite agreeing with us in regard to the general predominance of "P. W. D." engineers in carrying out architectural work in India, and the bad effect thereof, objects that we have done him an injustice in apparently classifying him as an engineer, inasmuch as he was educated as an architect in a well-known provincial office in England. We gladly make the correction; still the fact remains that Mr. Stevens was for many years, as we understand, in the service of the Public Works Department in India, and must have assimilated its methods to a greater or less extent; and our point is that in an architectural sense the officers of that Department, who carry out such a large part of Indian building, are out of touch with the architectural standards of (as we put it) London, Paris and Boston, and that it is almost inevitable that it should be so. Our primary interests in India have always been those of government and administration and works of utility, as is natural in the case of a conquered country; art takes a secondary place, and considerations of economical administration are often paramount. Mr. Stevens tells us that he would have wished to employ a high-class sculptor on the building we illustrated, for instance, but he was ruled out on a mere question of cost. It is better that it should be realised that English India is quite behind the mother country in artistic standards at present. Unless that is realised there is not likely to be any move for improvement.

Rebuilding of Colston Hall.

THE Directors of the Colston Hall Company advertised in our last issue for competition designs for the "restoration and refitting" of the Hall, with the rather unusual proviso that architects were to send in their names by October 30, after which date plans and sections of the existing premises and conditions of the competition can be obtained from the Secretary. The object of this arrangement is not apparent. If the Directors intend to make a selection out of the names sent in, they should have stated this in the advertisement; some architects who might compete will not choose to offer themselves for selection. If that is not the object, what is it? Apart from this, we will offer the Directors some advice in advance. In drawing up the Instructions, let them state clearly what are the numbers of chorus and of band for which they want accommodation on the orchestra; stating band and chorus numbers separately, as the band require more standing room than the chorus; a fact often quite overlooked by architects. Secondly, they should make up their minds, and state clearly, whether they intend the large hall for a concert hall or auditorium *only*, or for use also for balls and assemblies. In the latter case the usual flat floor is a necessity; in the former case it is much better avoided. Thirdly, do not let them rashly select an assessor on the mere ground that he has already built a concert hall. A great many architects have built concert halls and built them wrongly; in fact there is scarcely a concert room in the kingdom where the orchestra is planned in the best way with due regard to practical requirements. They had better aim at making a new departure, rather than repeating existing models.

Retirement of Mr. Blashill.

AT the last meeting of the London County Council the retirement of Mr. Blashill was announced, which will take effect at the end of the year, and we are glad to see not only that very high encomiums were paid to him by some of the members, but that a substantial retiring pension is to be assigned to him. Mr. Blashill may be said to have been an ideal County Council architect, combining thorough practical knowledge with administrative and business ability and scrupulous fairness and impartiality. It will be difficult to adequately fill his place.

The Architectural Association Conversazione.

THE Annual Conversazione of the Architectural Association was held on Friday evening the 21st, at the King's Hall, Holborn Restaurant, with what we may call the usual success. The guests were received by Mr. and Mrs. Fellowes-Prynne, and there was a numerous attendance. Among the works of art exhibited were a small collection of beautiful water-colour and other drawings by Mr. Axel Haig, and a screen of drawings by Mr. Brewer, including a pen line drawing under the title "The Water Gate," a bold towered fortification in the foreground, with a lofty city rising behind, which is one of the finest drawings of an architectural subject we have ever seen. Drawings were also lent by Sir Wyke Bayliss and Mr. Weedon. Some of the work of the Architectural Association Studio and Classes was exhibited, as usual; the drawings by the water-colour class indicated that there is a very good level of artistic feeling in this class, and that the members are being well taught in the right path of bold and free handling of water-colour. Messrs. Doulton had two stands of faïence and pottery at the top of the room, and Mr. De Morgan a collection of coloured and lustre ware at the other end of the room, containing some beautiful work. The musical entertainment included a selection of pieces by Messrs. Dan Godfrey's band, varied by three insertions of four-part glee-singing, excellent both in selection and execution, and which was attentively listened to, which is not always the case at a promenade entertainment. We may suggest whether some singing of that kind, interspersed with lighter music, might not form part of the smoking-concert entertainments. Surely every one would like it better than music-hall songs.

Posthumous Pugin on Sale.

THE following amusing advertisement appears in a weekly paper:—

"TO BUILDERS, CONTRACTORS, and CLERGY about to BUILD.—For SALE, a complete set of PLANS for a beautiful Gothic Church, to cost 8,000*l.* and to seat 700, by Welby Pugin, Esq., the eminent Architect. Cost 200*l.*, will sell for 50*l.* This is an unique chance to dispense with architects and their heavy professional fees, which in this case would be 400*l.*"

Then follows a statement as to where the plans may be seen, which we omit. What is so charming in this is the effort to make a flank attack on the living architects by offering a dead man's design for one-fourth its proper cost, and at the same time referring so unkindly to the "heavy fees" of this very ill-paid profession. The advertisers might have spared us that gibe, at all events. We fear that the advertisement is hardly likely to result in a "deal." Churches planned for one site will seldom suit another very well; and though Pugin was a man of genius, his Gothic is very much out of date now.

The Bridge House Estates, Finsbury-circus and London-wall.

YESTERDAY (Friday) was fixed for the letting by auction, by the Corporation, as trustees of the Bridge House Estates, of certain building sites in Finsbury and London-wall. Considerable attention was directed to the scheme by the tenants' representations that their legitimate interests are disregarded in thus dealing with the property—see the *Builder* October and November last year. The four plots cover an aggregate of 49,200 ft. superficial, with frontages of 298 ft. to London-wall, 95 ft. to Circus-place, 285 ft. to Finsbury-circus, and 69 ft. to West-street, comprising Albion Hall, and thirty-seven houses, some of which stand on the site of (old) Bethlehem Hospital, which abutted against the north and outer side of the London Wall; northwards lay Moor-

fields. The hospital, erected in 1675-6, after Robert Hooke's designs, was pulled down in 1815, and replaced by the Circus (southern side). The leases are to be granted for terms of eighty years from June 24, 1899; the lessors stipulate that the new buildings —on approval by the City Surveyor—shall be completed for occupation within eighteen months from that day, but if the property is let in one lot the limit will be extended to three years. An improvement is to be effected by setting back the London-wall frontage for about 300 ft. along its north side, between Finsbury-pavement and Circus-place, in order to widen the thoroughfare to 50 ft. The basement areas in front of all the scheduled houses in West-street, Finsbury-circus, and Circus-place are to be covered in level with the footway by pavement lights. The greater part of Finsbury (or Vynesbury) was included within the prebendal manor of Holywell, being one of the manors that formerly belonged to St. Paul's, and still give names to the stalls in the choir. On May 22, 1315, Robert de Baldok granted a lease at 20s. yearly of his prebendal manor of Finsbury, or Holywell, to the Corporation. The lease, renewed from time to time, finally expired in 1867, and the estate is now held by, it seems, the Ecclesiastical Commissioners. In the latter half of the fourteenth century the Mayors of London took the style of "Lord Mayor," and as some maintain, in virtue of lordship over the manor of Holywell, or Finsbury,

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The Turners' Company Exhibition.

THE Annual Prize Competition in Turning instituted by the Worshipful Company of Turners has lately been held at the Mansion House. The exhibition is a small one, and although some of the exhibits evince considerable skill, yet in point of design there is a great deal to be desired. In fact, students of this class, when left to themselves, produce works which as specimens of turning may be very well, but as specimens of design are often very dreadful. In this respect the Company might very well assist the craft by placing good designs before them, and rewarding them for their execution. The first prize of a silver medal and freedom of the Company is given for some turned newels which well deserve the prize, excepting as to design. In the metal section there are very few exhibits, and these seem to turn more on mechanism than on turning proper. The efforts of the Company are praiseworthy, but we should like them to do more for the craft by instruction, which could easily be done by equipping a workshop at the trades' training school at Great Titchfield street.

The London Sketch Club.

THIS Club, which holds weekly sketching meetings to work on given subjects, has opened its first exhibition at No. 175 New Bond-street. It consists of small sketch studies, mostly of landscape, some interiors, and a few figure subjects. The landscape sketches include some very good examples of rapid indications of broad effect, as in Mr. Champion Jones's "Eccleston Glen," Mr. Haité's "On the Broads," Mr. Tom Browne's "Kentish Lane," Mr. F. H. Jackson's "A Byeway" (a river scene at a lock), Mr. Lee-Hankey's "Tewkesbury" (the bridge, not the Abbey), "The Wheelbarrow," and "Sussex Meadows," which are all good; also "A Path over the Hills," by Mr. Walter Fowler. Among the best of the figure subjects are those by Mr. Sauber, some pencil sketches by Mr. Phil May, "Military Types" by Mr. F. C. Hardy, &c. A good many of the figure sketches run rather towards the humorous and caricature side of things.

Grafton Gallery Exhibition.

THE exhibition of the "Society of Portrait Painters" at the Grafton Gallery hardly does very much to advance the art of portraiture. There are a few very good portraits, a few clever but eccentric ones, and a large number of mediocrities. Sir W. Richmond's "Prince Bismarck" (4) may be said to be the most powerful portrait there; Manet's "The Poet Astruc" (2), with face and hands appearing to be made of parchment, the most absurd. M. Besnard's "Mdme. Rejane" (48), which we think we remember in the Salon, has the highest degree of cleverness, but is inharmonious in colour and seems wantonly coarse in the execution of the face and features. There is a full-length portrait by Mr. Whistler (5), which may be called a study in grey, with a charming little outbreak of colour in the flowers in one corner; but the face is hardly modelled at all, and we retain the old-fashioned idea that the face counts for something in a portrait, as well as the general effect. M. Legros paints what suggests the head of John the Baptist, but which is really that of M. Rodin, the sculptor (7), thrown into the middle of an expanse of raw canvas. There are a series of small portraits by Professor Herkomer, dominated by his colossal one of Tennyson; two or three admirable works by Mr. Lavery, especially the half-length of a lady (1); an "incident" portrait by Mr. Collier (58) of a lady squeezed between a piano and looking into a glass in which alone her face is seen—not very effective; a pretty portrait of a boy in cricket dress (61) by Mrs. Mary L. Waller; some hard imitations of the Reynolds school of portrait, by Mr. Ellis Roberts; two heads by Mr. Watts, in one of which, "Maud" (81), we get a real bit of colour inspiration at last (there is a great deal of very crude colour in the exhibition); one or two finely finished but hard works by M. Emile Wauters, and a portrait of Karl Blind by Mr. G. Sauter, in which the head looks as if painted in soap suds. Altogether, the exhibition is not a very satisfying or satisfactory one.

M. Puvis de Chavannes.

BY the death of M. Puvis de Chavannes the world of art loses the man who was unquestionably the greatest decorative painter of his time. He made his own style and æsthetic, and was in fact a kind of "school" in himself, standing alone and apart from all his contemporaries. How far he travelled, on his own lines, from the point from which he set out, we had evidence in the early picture by him, the "Beheading of John the Baptist," exhibited lately among the French pictures at the Guildhall, which no one who knew his mature works would have thought of attributing to him, and which in fact was a mere religious picture of an ordinary type. He soon emancipated himself from that restricted domain, and soared into a region of purely ideal art, using the human figure as a symbolism of abstract qualities and conceptions, and treating and grouping his works in a large and monumental spirit and with great severity though beauty of line, forming an ideal style for mural painting in subordination to architecture. Colour was repressed and chastened, probably from a fixed principle in regard to the conditions of wall painting. In this respect one would not perhaps wish that all mural painting should be governed by this very great reticence in regard to colour; but nevertheless the style of Puvis de Chavannes was a great one, and for mural painting has not been equalled in modern times. It is remarkable that, notwithstanding the admiration and even reverence largely felt for him among French artists, he had hardly any imitators—

"Within that circle none dared walk but he."

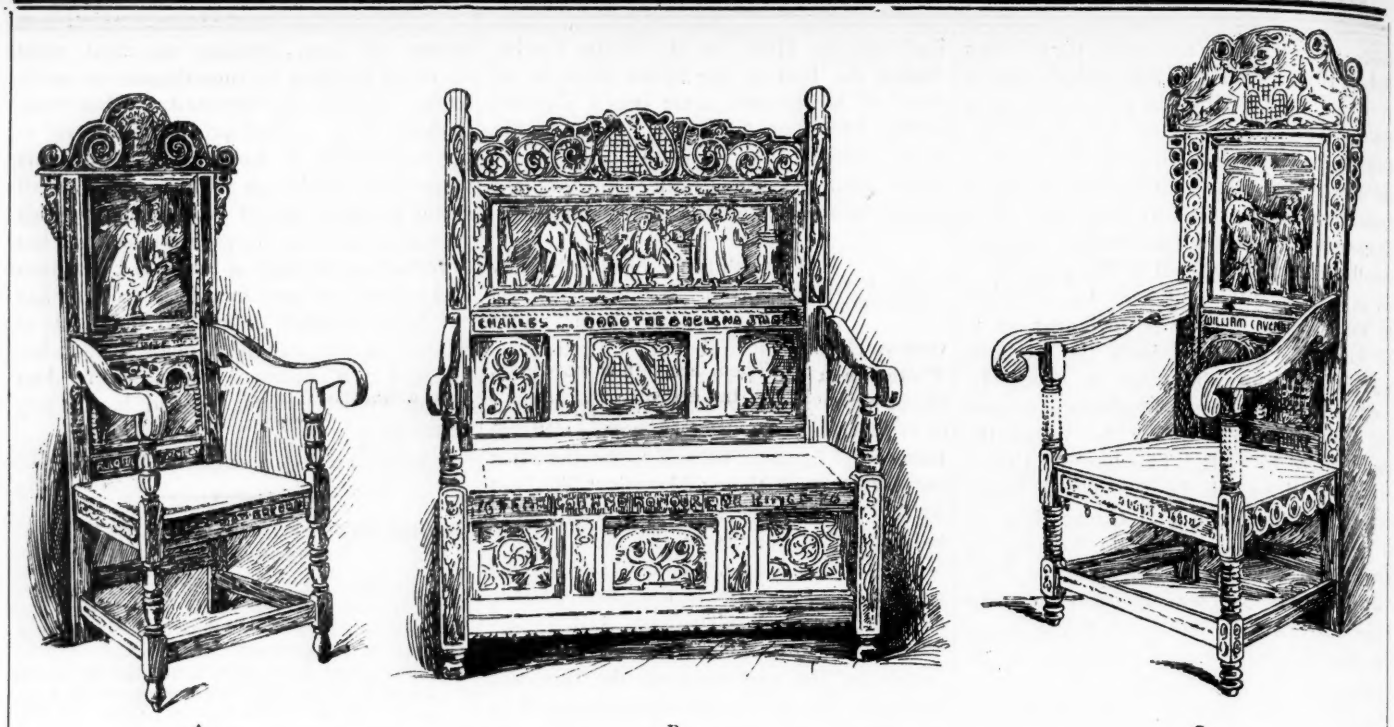
GODALMING MUNICIPAL BUILDINGS COMPETITION.

IN deciding upon new Municipal Buildings, the Corporation of Godalming selected the site of the existing public hall, which is an old building of no particular interest, and propose to embody it in the new scheme, the front and entrances to be rebuilt in keeping with the new building. As this hall occupies nearly half the available street frontage it strikes the key note of the whole plan. The sum to be spent is 7,000*l.*, and the additions (if we may call them so) required are —on the ground floor, a Court-room, rooms for the Magistrate, witnesses, Surveyor, Sanitary Inspector, Rate Collector, water office, and also an armoury, as the public hall is used as a drill hall; on the first floor a Council Chamber, a committee-room, and Town Clerk's offices. A fire-engine house and men's rooms are also required, but it was left to the competitors to incorporate them in the main design or put them as separate buildings with the stables in the rear. In the latter case a 10-ft. passage through the frontage to the yard south of the public hall was necessary to allow of the use of the fire engine.

Eight sets of designs were submitted, and Mr. Mountford, the assessor, has not had a very difficult task to select the first. This place has been won by Messrs. Lanchester, Stewart, & Rickards with a very successful design. They have placed the Municipal Offices on the street front south of the public hall: the court-room and its entrances are in the courtyard, entered through a 10 ft. passage on the south of the offices, with the fire house and stabling detached in the rear. The only fault to find with the excellent and simple arrangement of parts in the plan is that the lighting of the corridors is not good; but the site is a difficult one with regard to light. This design is the only one that is not cut in half by tunnelling a 10 ft. carriage way through it in the centre, an avoidance of the letter of the conditions, but a great improvement to the appearance of the design, as it allows of the whole of the rest of the front to be treated as one façade with an entrance to the Hall on the right and to the offices on the left. The façade is a delightful composition, expressing at once the purpose of the building, and getting architectural effect without going beyond the modest sum at the disposal of the architects. The drawings show a brick building with a stone cornice, wooden window casements, brick architraves, and leaded lights. A break is formed in the centre of its length by the Council Chamber projecting 3 ft. or 4 ft., supported on Doric columns, forming on the ground floor a loggia, the whole of this break is in stone. Ionic columns are introduced round the first floor windows, a deep shadow being caused by the central window being set back 6 ft. or 7 ft. into the Council Room; above this order is a high plain pediment. This plain space of stone wall is enriched by the wrought-iron work supporting a clock stretching some 10 ft. or 15 ft. over the street. Above the pediment, at the intersection of the ridges of the roof, is a wooden lantern covered with lead, a decorative feature of the design.

Godalming is to be congratulated on adding a new building to its borough so well in keeping with the old-fashioned charm of the place, and in itself an architectural design of great merit and attraction.

No other premium was offered, but in his report Mr. Mountford has placed the design by Mr. E. R. Robson second, and that of Messrs.



A B C

Examples of Seventeenth Century Furniture. Drawn by Mr. E. W. Gregory.

Ardron & Dawson third. Mr. Robson's is a nicely-balanced design, the south angle emphasised with a gable and broken pediment, in brick with stone dressings ; perhaps the fault of the outside is that it looks rather too much like a "higher grade school." The plan, unfortunately, shows an awkwardly placed staircase, and the Sanitary Inspector's office and Magistrate's room are not well lighted.

Messrs. Ardron & Dawson show a stone building rather fussy in detail and too ornate to be possible for the money, illustrated by a charming little pencil perspective. The carriage way in the centre divides the building into two, and seems to dwarf the comparatively small façade. In the plan there is some waste of room in the matter of corridors, but there is a good central feature in the hall and staircase.

Messrs. Welman & Street send a well arranged plan ; perhaps the court-room is too far from an entrance to be convenient. The outside is spoilt by the number of features introduced, and it is besides too expensive a design to be carried out at the estimated cost.

EXAMPLES OF SEVENTEENTH-CENTURY FURNITURE.

These three pieces of oak furniture were originally made for members of the families of Cavendish, Stanley, and Lumley (of Waterford) respectively. They are fine specimens of furniture of the period, and are now in the possession of Mr. William Allon, of Abbotts Hill, Derby.

The following are the inscriptions and dates cut on them : A—"Richard Lumley, 1635" ; B—"Charles and Dorothea Helena Stanley," and "16 · Fear God and Honour ye Kinge · '76" C—"William Cavendish, 2nd August, 1618."

The illustrations are from pen sketches by Mr. Edward W. Gregory.

New Buildings in Aberdeen.—The Plans Committee has sanctioned the following plans of new buildings :—Dwelling-house on the south-west side of Crimon-place, for Mr. William Anderson, Ferryhill-place, per Mr. Alexander Melville, C.E. ; fourteen dwelling-houses on the west side of Wallfield-place, for Mr. George Duguid, builder, per Messrs. Walker & Duncan, architects ; ice factory at the junction of Poynernook-road with Russell-road, for the Bon-Accord Ice and Cold Storage Company, Limited, per Mr. George Coutts, architect ; two dwelling-houses on the west side of Sunnyside-road, at its junction with Sunnybank-place, for Mr. Charles Lemmon, mason ; two dwelling-houses on the north-west side of Wallfield-crescent, for Messrs. Stephen & Murray, carpenters, Bucksburn, per Mr. John Cameron, builder ; shed at Pocra, for Mr. Thomas Walker, per Mr. William Smith, architect ; alterations and additions in connexion with the North of Scotland Distillery, Hardgate, for the Dailuaine-Talisker Distilleries, Limited, per Mr. Charles C. Doig, architect, Elgin.

VARNISHES, &c., USED IN BUILDING STRUCTURES, BY WOOD WORKERS, &c.

The various kinds of woods used in the building of a house, decoration of a room, erection of a staircase, &c., necessitate the employment of special kinds of varnish ; what is suited for a soft-hearted wood will not do for a hard wood, and *vice versâ*. The preliminary treatment each wood should receive before being varnished has to be adapted to each particular case, and it will be the purpose of this paper to set forth the precise treatment required in each case, according to the nature of the wood to be varnished. There is another point of consideration also, which is of great importance to all who use varnishes, and that is concerning the actual composition of the varnish in use. Since the American introduction of turpentine and linseed oil substitutes, many inferior varnishes are sold that play all sorts of pranks after being laid on wood. Rosin oil, for instance, is very often used as an ingredient in cheap varnishes, but this oil will never dry, and forms a sticky mass that the slightest heat will soften and cause to run. To counteract this action, when such substances form the components of a varnish, a quickly evaporating fluid, such as naphtha or benzine, is used ; by this addition, however, the varnish thus prepared is only rendered worse, as will be seen presently. Common resin and colophony (the refuse or residuum obtained from the distillation of turpentine) is also largely used as a substitute for resins. This body acts very much like rosin oil in its non-drying nature, with the additional disadvantage that the coat of varnish when dry is brittle and pulverulent, and can be rubbed off easily. When a varnish consists of two such antagonistic bodies as rosin oil and naphtha or terebene, or some other quickly evaporating hydro-carbon, the coat of varnish will dry in streaks, leaving great fissures between, showing the wood beneath. This is due to the fact that the quickly volatile fluid forsakes the solid ingredients of the varnish before the latter have had time to dry uniformly and hard, and, as a consequence, the solid parts of the varnish contract on themselves and eventually dry up into semi-hard streaks. It is a fraud to call such an article a "varnish."

Varnishes are chiefly of two kinds, oil varnishes and spirit varnishes ; the latter kind are easily prepared by any one, as they do not require special or elaborate apparatus for their production. In oil varnishes, however, a special plant is required for boiling the oil, dissolving the "gum" (it is a common but incorrect practice to call the resins used in varnish-making "gums"), and mixing the ingredients. These latter kind of varnishes are more expensive than spirit ditto, and are likewise more special in their application.

Spirit Varnishes.

Owing to the Explosives and Petroleum Acts no one is allowed to keep more than a small quantity of any volatile explosive fluid, such as naphtha, benzine, &c., on their premises without a licence, and before such licence is granted the premises have to be inspected to see if they are suitably constructed for the safe storage of such fluids, consequently any one who contemplates making more than a gallon of varnish at a time should satisfy himself as to the requirements of these Acts of Parliament.

As a rule the plant required by the novice for making spirit varnishes will be the following : Some two-gallon stoneware bottles, earthenware pans with covers, a closed-in stove in which can be placed the vessel in which the solids are dissolved, a few large size tin funnels over which should be stretched fine linen or other suitable filtering material arranged so as to dip slightly into the funnel, a zinc or iron trough 6 in. high which can be filled with sand and placed on the stove ; this apparatus is for maintaining a constant temperature, a uniform heat, by which means the spirit or other explosive fluid in which the solids are being dissolved will not be raised to an explosive heat.

The harder resins, such as copal, amber, &c., are not easily dissolved in spirits and hydrocarbon liquids, therefore the resins usually employed in making spirit varnish are the softer kind, such as sandarac, kauri (Australian copal of a soft kind), anime, dammar, mastic, and shellac ; the latter material is used in very large quantities.

Oil Varnishes.

The plant required in making these varnishes consists of a specially constructed boiling vessel or "gum-pot" (which is set in a brick-constructed furnace, but capable of being raised by a pully and crane, so as to be quickly removed in the event of its contents boiling over), and receiving vessels, as already mentioned. It will not pay to make oil varnishes on a small scale for one's own use, as the expense of plant would be too great, and moreover the skill required is such as can be obtained only by long and extensive experience. To enable the reader, however, to form some idea of what the actual composition of the oil varnishes on the market are (or rather what they should be if genuine) recipes and formulæ for preparing them are included in this paper.

Making Spirit Varnishes.

In the following formulæ it will be best to work on some definite plan, such as the following : Select a two-gallon stone jar that can be corked tightly ; into this put the solid ingredients in a finely-powdered state ; on them pour the solvent fluid, and then set it in the sand bath buried three or four inches deep, but be sure quite two inches of sand remain under-

neath the jar ; then gently heat the sand, and before the contents of the jar become hot, put in the cork and continue the heating until the solids are dissolved ; an occasional shake up of the contents will hasten and facilitate the process. It is well not to put the cork in at once, as methylated spirit absorbs moisture, and therefore any moisture in the bottles would be absorbed and the varnish thus produced be dull ; by leaving out the cork until the contents become warm the moisture will be expelled, and then by corking up the bottles the spirit will not be lost by evaporation unless the contents become very hot. It is quite safe to raise the temperature until the spirit boils, but such a heat is seldom required. If the solids are such as readily cohere or become one solid mass, such as sandarac resin, it is well to put in coarsely - pounded glass with the powdered resins, but before use all such varnish will require to be filtered through some fabric. When straining a spirit varnish it is well to tie the fabric over the top of an earthenware pan and then put a cover on while the varnish is straining, so as not to lose any of the spirit by evaporation, which would not only be a loss of material but also render the varnish too thick or viscid. If the varnish is not wanted at once it is clarified by allowing it to stand undisturbed for a week or two, and then carefully pouring off the clear fluid from the dregs.

Varnish for Walnut.

Ingredients :—
160 fluid ozs. methylated spirit
½ oz. of nigrosine (for spirit)
1 oz. of bismarck brown red
24 ozs. of shellac (orange or ruby).

Prepartion :—
Dissolve the nigrosine and bismarck brown in the spirit, and then dissolve therein by warm digestion the shellac. There are two kinds of nigrosine, one soluble in spirit, the other soluble in water ; be sure and use the right kind. By varying the proportions of these two dyes, the colour or shade can be altered at will.

Varnish for Ebony.

Ingredients :—
160 fluid ozs. methylated spirit
2 ozs. nigrosine (for spirit)
24 ozs. shellac.

Varnish for Mahogany.

No. 1 :—
160 fluid ozs. methylated spirit
1 oz. dragon's blood.
24 ozs. shellac.

Digest the dragon's blood for several days in the spirit before dissolving therein the shellac. But the colour of mahogany is better imitated by using bismarck brown red, with just a little nigrosine to tone down the redness.

No. 2 :—
160 fluid ozs. methylated spirit
16 ozs. sandarac resin
8 ozs. shellac
9 ozs. Venice turpentine
4 ozs. dragon's blood.

Varnish for Oak (Common).

This is not a spirit but a turpentine varnish, which will not bear rubbing but is a quick-drying varnish and lustrous.

Ingredients :—
160 fluid ozs. of turpentine
56 ozs. common resin

This varnish does not require straining.

Walnut Staining Varnish.

This and the following varnishes are for rapidly colouring and varnishing soft or hard white woods simultaneously, so as to imitate the real wood.

Ingredients :—
160 fluid ozs. methylated spirit
3 ozs. walnut spirit stain
24 ozs. amber resin, powdered
24 ozs. shellac

Digest in the sand bath.

Oak Staining Varnish.

Ingredients :—
160 fluid ozs. methylated spirit
5 ozs spirit stain
8 ozs. sandarac resin, powdered
20 ozs. shellac
24 ozs. amber resin, powdered
4 fluid ozs. methylated ether

Mix the ether and spirit together and then dissolve therein the solid ingredients by the aid of the sand bath.

Mahogany Staining Varnish.

Ingredients :—
160 fluid ozs. methylated spirit
4 ozs. mahogany spirit stain
24 ozs. shellac
8 ozs. sandarac resin, powdered
24 ozs. amber resin

Proceed as above.

Ebony Staining Varnish.

Ingredients :—
160 fluid ozs. methylated spirit
24 ozs. shellac
3 ozs. gum benzoin
5 ozs. lampblack

Digest as above, and stir up well to mix the black pigment with the gums when dissolved.

Another formula. Ingredients :—
160 fluid ozs. methylated spirit
8 fluid ozs. ebony spirit stain
24 ozs. shellac
10 ozs. sandarac resin, powdered
24 ozs. amber resin

Proceed as above.

All the above staining varnishes require straining before use. The spirit stains are made by dissolving suitable aniline colours in strong spirits of wine.

A Red Staining Varnish

is prepared from the following ingredients :—
160 fluid ozs. coal tar naphtha
40 ozs. common resin
Red oxide of iron sufficient to give the required red colour.

A Colourless Varnish for Wood.

Ingredients :—
100 to 120 fluid ozs. methylated spirit
80 ozs. shellac
7 ozs. mastic resin

Dissolve by standing in a cool place for several days, giving it a frequent shake up.

Varnish to Show the Grain of the Wood.

Ingredients :—
160 fluid ozs. methylated spirit
19 ozs. orange shellac
12½ ozs. sandarac
12½ ozs. colophony
3 ozs. camphor

Dissolve all the solids but the colophony in the spirit, add the latter, and then put the vessel in the sand bath and heat the contents until boiling. Then filter or strain off through felt filtering bags, and give the filtered fluid twelve hours' rest to clarify before use.

A common varnish for general use is prepared by dissolving
16 ozs. of shellac in
160 fluid ozs. of methylated spirit
but a much better product is obtained as follows :—
Dissolve
48 ozs. of resin in
50 fluid ozs. of spirits of turpentine
and then let it stand for a few days, occasionally shaking it up, then mix with it 800 fluid ozs. of boiled oil and, after shaking, to well mix the two, let it rest in a warm place until clear, when the clear portion should be decanted, and for use thinned with turpentine as desired.

A dark varnish for light woods is prepared by digesting together at a gentle warmth :—
1 part of annotta
256 parts of methylated spirit
and then add
1 lb. shellac
2 lbs. sandarac resin
½ lb. mastic resin
½ lb. elemi
1 lb. Venice turpentine
¼ lb. dragon's blood.

This may be thinned with more spirit if desired.

Dammar Varnish.

Ingredients :—
160 fluid ozs. turpentine
80 ozs. gum dammar
40 ozs. sandarac resin
8 ozs. mastic resin

Kauri Copal Varnish.

Ingredients :—
160 fluid ozs. methylated spirit
48 ozs. kauri copal
24 ozs. mastic resin
54 fluid ozs. chloroform

(the two fluids are mixed and the solids dissolved therein.

Varnish for Wood in General.

Ingredients :—
160 fluid ozs. naphtha
16 ozs. shellac
6 ozs. sandarac resin
½ oz. benzoin
6 ozs. copal varnish

Dissolve the resins in the naphtha and then add the copal varnish.

No. 2. Ingredients :—
160 fluid ozs. methylated spirit.
26⅔ ozs. sandarac resin
6⅔ oz. shellac
13⅓ ozs. resin
20 ozs. Venice turpentine

Digest at a gentle heat.

Transparent Varnish suitable for White Woods.

No. 1. Ingredients :—
160 fluid ozs. methylated spirit
⅓ lb. sandarac resin
½ lb. dammar
1 lb. gum thus
1 lb. Manila copal
1 lb. elemi

No. 2. Ingredients :—
160 fluid ozs. methylated spirit
30 ozs. soft kauri copal
4 ozs. camphor
8 ozs. mastic
4 ozs. Venice turpentine

This is a quick-drying white varnish that may be polished when hard.

No 3. Ingredients :—
160 fluid ozs. methylated spirit
1 lb. Manila copal
1 lb. sandarac resin
1 lb. gum benzoin
2 lbs. gum thus

No. 4. Ingredients :—
160 fluid ozs. methylated spirit
32 ozs. sandarac resin
8 ozs. mastic resin
16 ozs. Canada balsam

No. 5. Ingredients :—
160 fluid ozs. methylated spirit
32 ozs. Manila copal
8 ozs. mastic resin
4 ozs. camphor
4 ozs. Venice turpentine

Dissolve the camphor and copal in the spirit before adding the other ingredients.

No. 6. Ingredients :—
160 fluid ozs. methylated spirit
40 ozs. sandarac resin
8 ozs. mastic resin
2 ozs. anime resin

No. 7. Ingredients :—
160 fluid ozs. methylated spirit
32 ozs. sandarac resin
8 ozs. mastic resin
16 ozs. Canada balsam

Hard Spirit Varnishes.

No. 1, Brown.
160 fluid ozs. methylated spirit
8 ozs. shellac
16 ozs. sandarac resin
4 ozs. elemi resin
4 ozs. Venice turpentine

No. 2, Brown (for common purposes).
160 fluid ozs. methylated spirit
12 ozs. shellac
12 ozs. resin

No. 3, Brown.
160 fluid ozs. methylated spirit
24 ozs. sandarac
16 ozs. shellac

No. 4, Brown.
160 fluid ozs. methylated spirit
24 ozs. sandarac resin
16 ozs. shellac
20 fluid ozs. turpentine varnish,

made by dissolving brown resin in turpentine in the proportion of 1 part resin, by weight, to 20 parts turpentine, also by weight.

No. 5, White.
160 fluid ozs. methylated spirit
40 ozs. sandarac resin
16 ozs. gum thus

No. 6, White
160 fluid ozs. methylated spirit (65 over proof)
40 ozs. sandarac resin
½ oz. camphor
16 ozs. coarsely-powdered glass

After straining, add 20 fluid ozs. of pale turpentine varnish.

No. 7, White.

160 fluid ozs. methylated spirit
24 ozs. sandarac resin
8 ozs. mastic resin
4 ozs. elemi resin

No. 8, White.

160 fluid ozs. methylated spirit
12 ozs. sandarac resin
16 ozs. mastic resin
16 ozs. powdered glass
12 ozs. pale Venice turpentine
10 fluid ozs. turpentine varnish

No. 9, White.

160 fluid ozs. methylated spirit
18 ozs. sandarac resin
8 ozs. mastic resin
2 ozs. turpentine

No. 10, White.

160 fluid ozs. methylated spirit
32 ozs. sandarac resin
8 ozs. mastic resin
4 ozs. elemi resin
16 ozs. Strasburg turpentine

All the above hard varnishes can be polished when dry and hard. They should be laid on with a brush used always in one direction, so as not to generate froth, for if they do, they dry dull and lustreless; 24 hours is usually sufficient time to allow them before proceeding to polish.

Soft White Varnish.

160 fluid ozs. methylated spirit
24 ozs. sandarac resin
16 ozs. gum elemi
4 ozs. anime resin
2 ozs. camphor

White Shellac Varnish.

160 fluid ozs. methylated spirit
24 ozs. freshly-bleached shellac.

If the shellac is not freshly bleached it will not readily dissolve, and if it be not perfectly dry the varnish made therefrom will be dull and cloudy.

Shellac varnish may be bleached by the use of animal charcoal as follows :—

Dissolve 24 ozs. orange shellac in 160 fluid ozs. methylated spirit, and then mix with it 32 ozs. of animal charcoal and warm the mixture for ten minutes by the aid of a sand bath, then test a little by filtering. If not quite light enough, add more charcoal, and when sufficiently colourless, filter off the whole for use.

A White Spirit Varnish.

160 fluid ozs. methylated spirit
54 ozs. pale Manila copal
18 ozs. Dammara resin
18 ozs. bleached shellac
54 ozs. toluol.

Coloured varnishes of any colour may be produced by colouring any of the above varnishes with any suitable aniline dye soluble in spirit. It is a good practice to keep a stock of a quart or pint of spirit deeply coloured with the dye, and then add a sufficient quantity of the coloured spirit to the made varnish to produce the colour desired. The dye woods may also be used in the same way—viz., by digesting them for several days in the spirit, straining and keeping the strained fluid for use as above. A pint or quart of each colour should be kept in stock, and then by mixing these as required any tone of colour can be obtained for staining wood or varnishes.

Spirit Varnishes with Oil.

Some spirit varnishes are mixed with oil, in which case it is usual to dissolve the solid ingredients separately, and then mix the fluids therewith. To effect the melting of the resin by heat, the apparatus used in oil varnishes is required.

These varnishes are prepared by melting the solid resin in a copper vessel until fluid, then adding hot linseed oil (not boiled with litharge or any other lead salt), and, after mixing these materials, turning the compound into another vessel, which can be heated, and boiling the mixture until all cloudiness disappears, and the mass can be drawn out into strings when pinched between finger and thumb. When this point in the heating of the mixed oil and resin is reached, then the mass is ready for the thinning process, which is effected by the addition of turpentine. As this fluid is volatile and very inflammable, the oleo-resinous mass should be allowed to cool somewhat before adding the turpentine, and the mixing should always be conducted in some place where there is no fire or naked light. There is always risk of a conflagration in the making of oil varnishes, and therefore the buildings in which the operations are carried out should be constructed with this contingency in view. More explicit details for preparing oil varnishes are not here given on that account.

Formulæ for Oil Spirit Varnish.—Amber Varnish.

Ingredients :—
3 lbs. of amber resin (chip amber of a pale colour)
3 lbs. of pale copal
3 lbs. of sandarac resin

are put into the gum pot (*i.e.*, the vessel in which the resins are melted) and heated until fluid; meanwhile 18 lbs. of linseed oil is heated (but not boiled or it will become decomposed), and this is run in on the melted resin. The mixture is stirred and then run out into another vessel where it is boiled until stringy, and when cooled enough to safely admit the addition of turpentine sufficient of that fluid is added to bring the mass to the right consistency.

Cabinet Makers' Varnish.

8 lbs. sandarac resin
4 lbs. boiled oil

Boil until the mass is stringy, and then thin with 12 lbs. of turpentine.

Kauri Copal Varnish.

8 lbs. of pale kauri copal
4 lbs. boiled oil
12 lbs. turpentine

Prepare as last recipe.

Pale Copal Varnish.

8 lbs. of Sierra Leone copal
4 lbs. boiled linseed oil
14 lbs. turpentine

Prepare as above described.

Oil Varnishes.

These are prepared from oil that has been boiled with some drying agent, such as litharge, zinc sulphate, borate of manganese, and require very careful and skilful attention in their preparation.

The oil has to be carefully boiled under certain conditions with the drying agent, the "gums" have to be melted in a separate vessel, and the compounding of the ingredients for producing a perfect varnish needs the exercise of skill that is acquired only by experience. As already stated, only the practical varnish-maker can undertake the production of such varnishes to be remunerative. The following formulæ, however, will put the reader in possession of the composition of such varnishes.

A dark oak varnish is prepared from the following ingredients :—

42 gals. of raw linseed oil
15 lbs. of flake litharge
15 lbs. of sulphate of zinc
164 lbs. of kauri gum
36 gals. of turpentine

The oil is first boiled with the litharge and zinc sulphate until it is sufficiently boiled to a linseed oil varnish, the gum is melted in the gum pot, the boiled oil mixed with it, the mixture boiled until stringy, and finally the mass is thinned with the turpentine.

A pale oak varnish is prepared from the following ingredients :—

40 gals. raw linseed oil
15 lbs. litharge
132 lbs. kauri gum
48 lbs. hard copal
36 gals. of turpentine

Prepared as in last recipe.

A cabinet varnish is prepared by melting

28 lbs. of gum anime,

then boiling this with

1½ gals. of heated raw linseed oil,

until stringy, then mixing with

11½ gals. of turpentine

A "carriage" varnish, which is the general name given to varnishes that are used in the building trades, is prepared as an oil varnish from the following ingredients :—

42 gals. linseed oil
15 lbs. litharge
60 lbs. kauri gum
60 lbs. anime
60 lbs. copal resin
40 gals. turpentine.

Mineral turpentine varnish is made by digesting altogether :—

1 gal. mineral naphtha
1½ gals. turpentine
18 lbs. pale resin
7 lbs. Venice turpentine
2 lbs. boiled oil.

Flatting varnish consists of melting 8 lbs. anime resin, mixing 2 gallons of oil, and then of boiling the mixture for 4 hours, and then thinning with 3½ gallons of turpentine.

Wainscot Varnish

consists of :—

8 lbs. anime resin
3 gals. clarified oil
4 ozs. litharge
4 ozs. dried white copperas
4 ozs. dried sugar of lead
5½ gals. of turpentine

Prepare as in oak varnishes.

Body Varnish.

8 lbs. anime resin, best
2 gals. boiled oil
3½ gals. turpentine

Prepare as in last recipe.

Elastic Hard Varnish.

a { 8 lbs. copal resin; 2 gals. of oil; 4 ozs. dried sugar of lead; 3½ gals. of turpentine
b { 8 lbs. anime resin; 2 gals. of oil; 4 ozs. dried copperas; 3½ gals. of turpentine

Prepare each varnish (*a* and *b*) separately, and then mix the two and incorporate by boiling together.

Hard Church Oak Varnish.

8 lbs. kauri gum
3 gals. of oil
5½ gals. of turpentine

Dissolve the gum in the gum-pot, heat the oil, and mix the two until the mixture strings well, and finally thin with the turpentine.

Pale Oak Varnish.

8 lbs. gum copal
3 gals. oil

Melt the copal and mix with the oil, then add

4 ozs. of dried copperas
4 ozs. dried sugar of lead
4 ozs. litharge

Boil the mixture until it strings well and thin with 5½ gallons turpentine.

Pale Copal Varnish.

8 lbs. palest copal resin
2 gals. pale boiled oil
5½ gals. turpentine

Melt the resin, mix with the heated oil, boil until it strings well and thin with the turpentine.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring Gardens, Mr. McKinnon Wood, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Chelsea Vestry 8,000*l.* for paving works; the Islington Vestry 22,500*l.* for electric lighting purposes; the St. Martin's-in-the-Fields Vestry 2,860*l.* for paving works; and the Camberwell Guardians 14,250*l.* for alterations and additions to the workhouse.

New Tramways Department—The General Purposes Committee brought up a report dealing with the new Tramways Department. It was pointed out that the new institution would have to deal with all matters relative to tramways acquired or to be acquired by the Council, in connexion with which many important questions would in the near future arise. The Committee recommended that a Chief Officer of Tramways should be appointed, at a salary of 1,500*l.* a year, and that an advertisement should be issued inviting applications for the appointment. After some discussion, during which amendments were put forward to reduce the proposed salary, the recommendations were agreed to.

The Superintending Architect.—The report of the same Committee contained the following paragraph :—

The Council, on October 26, 1897, passed the following resolution :—"That, as the retirement of Mr. Blashill would cause inconvenience to the public service, he do continue to hold his appointment for another year, as from December 8 next." The year being about to expire, we have again had the matter under consideration. Mr. Blashill was appointed by the late Metropolitan Board of Works in February, 1887, and has thus served eleven years. Mr. Blashill attained the age of sixty-five years in

December, 1895, and is, therefore, nearly sixty-eight years of age. The Council has already on three occasions extended the term of his appointment, and we feel that we should not be justified in again asking the Council to pass a similar resolution. We have accordingly directed our attention to the amount of pension which should be granted to Mr. Blashill as a recognition of the valuable and zealous service which he has rendered to the Council and to the late Board. Under the Superannuation Act, 1866, the Council can grant to an officer retiring after sixty years of age and having completed ten years' service, an annual allowance at the rate of a sixtieth of his salary in respect of each year's service not exceeding forty years. There is also an additional provision that in the case of a person appointed to an office when over thirty years of age on account of professional or other peculiar qualifications not ordinarily to be acquired in the Council's service, the Council may in computing the amount of his superannuation allowance, add a number of years not exceeding ten to the number of years he may have actually served. Mr. Blashill was fifty-six years old at the time of his appointment as superintending architect, and his services having been so valuable and devoted we think that the Council will wish to grant him a retiring allowance of the highest amount authorised by the statute. We may point out that a similar course was adopted in the case of Mr. R. Ward, the late solicitor, and also in the case of Mr. Arthur Gunn, the late Comptroller of the Council. We accordingly recommend :—

(*a*) That a retiring allowance of 525*l.* a year, being at the rate of twenty-one-sixtieths of his salary of 1,500*l.* a year, ten years being added to his eleven years of actual service, as authorised by the fifth section of the Superannuations Acts, 1866, be granted to Mr. Thomas Blashill as from December 31 next, and that up to and including that date his salary be continued to be paid at the rate of 1,500*l.* a year.

In the event of the above recommendation being adopted it will be necessary to proceed with as little delay as possible to the appointment of a Superintending Architect to succeed Mr. Blashill. We recommend :—

(*b*) That an advertisement be issued inviting applications for the appointment, on the usual conditions attaching to appointments in the Council's service, of a Superintending Architect, at a salary of 1,500*l.* a year.

Mr. Dew moved to refer back recommendation (*a*) for further consideration. There was not sufficient reason why, after such comparatively short service, the proposal of the Committee should be agreed to.

Mr. Piggott seconded the amendment.

Colonel Rotton said that had the mover and seconder of the amendment not been new members of the Council they would have hesitated before moving the amendment. All those members of the Council who knew Mr. Blashill thoroughly appreciated the value of his services. At the time of his appointment, the compulsory retirement rule was not in force, otherwise Mr. Blashill would probably have declined to enter the service of the Council.

Several other councillors spoke of the value to the Council of the services of Mr. Blashill during the last few years.

Dr. Longstaff said that those who had had the advantage of working with Mr. Blashill during the past ten years knew how ably he had carried out his duties.

Mr. Beachcroft said that the total number of the staff in the Architect's department when Mr. Blashill commenced his duties was 53; now it was 110. When Mr. Blashill was appointed his duties were almost of a supervisory character. Since then the Works Department had been established, and some of them might know how great had been Mr. Blashill's responsibility in regard to that department. He regretted that the Council could not add to the resolution some words indicating how high was their opinion of Mr. Blashill, and he (the speaker) deeply regretted that any amendment had been moved to the recommendation. He was anxious that they should all say when Mr. Blashill left them: "Well done, good and faithful servant."

On a division the amendment was defeated by 89 to 23, and the recommendations were agreed to.

Clare Market Scheme and Holborn to the Strand Street.—The Housing of the Working Classes Committee, in conjunction with the Improvements Committee, recommended the purchase of land, for the rehousing of people to be displaced by the Clare Market and Holborn to Strand improvements, from the Duke of Bedford at 118,740*l.*

This was agreed to.

Dangers of the Cinematograph.—The Theatres Committee reported that, in view of the destruction by fire of a cinematograph apparatus at the Tivoli Music Hall, Strand, during a performance on the 17th inst., they had again considered the question of the use of the cinematograph lanterns in places under the control of the Council. On January 25 last the Council adopted certain regulations which were framed with respect to such entertainments, but having regard to the risk of fire which was inseparable from such exhibitions, thought it was not advisable to have any settled regulations, but that licensees should, before holding such entertainments, submit full particulars to the Council in order that the proposed arrangements might be fully considered. They therefore recommended :—"That the resolution of the Council of January 25, 1898, approving certain regulations respecting the use of cinematograph lanterns in premises licensed by the Council be rescinded." This was agreed to.

Legal Proceedings.—The Building Act Committee reported as follows, the recommendation being agreed to :—

"On May 2 last proceedings were taken by the Council at the Guildhall Police-court in respect of openings having been illegally made in the party-wall between Nos. 45a and 46a, Basinghall-street, and No. 4, London-wall-avenue. The Alderman who heard the case decided that the buildings came within the exemption specified in Section 77 (1) of the London Building Act, 1894, which states that buildings shall not be united except where they are wholly in one occupation *or are constructed or adapted to be so.* The summonses were therefore dismissed; the Alderman, however, expressing his willingness to state a case. We are advised that it is questionable whether the Alderman has rightly construed the words 'or are constructed or adapted to be so,' and, as the question of the irregular uniting of buildings is a very important one from a fire risk point of view, and is constantly arising, we think it very desirable that an authoritative decision should be obtained upon the point raised. The Alderman has accordingly at our request stated a case for the opinion of the High Court as to whether the words in the section of the Act referred to bear the interpretation he has placed upon them. We recommend—That the solicitor do take the necessary steps for obtaining the decision of the High Court upon the case stated by the Alderman with reference to the formation of openings in the party-wall between Nos. 45a and 46a, Basinghall-street, and No. 4, London-wall-avenue."

An Embankment Project. — Mr. Gilbert moved: "That it be referred to the Improvements Committee to report as to the cost of making an embankment on the south side of the Thames from Westminster Bridge to Blackfriars Bridge, and that they specially report on the following points—(a) on the desirability of retaining the whole of the property benefited by the improvement as the property of the Council; (b) on the desirability of reserving a part of the site for a large housing scheme; and (c) after consultation with the Establishment Committee, on the advisability of reserving a site at the western end of the proposed embankment for a new Council chamber and offices." In doing so, he said that he thought if the embankment was constructed they would be able to reclaim some 18 acres of land. It was at present a miserable locality, but could be made very bright and pleasant, while the Council could retain the frontage and reap all the benefits to be gained by the construction of the embankment.

No one seconded the motion, and it dropped.

The Council adjourned at seven o'clock.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting of the new session of the Royal Institute of British Architects will be held on the 7th prox., when the President, Professor Aitchison, R.A., will deliver an address.

The following is the programme for the session :—

November 21.—"The Comparative Value of Documentary and Architectural Evidence of English Cathedrals." By Francis Bond, M.A.

December 5.—"Fireproof Construction in America." By R. W. Gibson (New York). Under the management of the Science Standing Committee.

December 19.—(i.) "The Application of Electric Power to Practical Purposes in Buildings." By H. R. J. Burstall, M.Inst.C.E. (ii.) "Some Practical Hints on the Production and Use of Electricity for Lighting Country Houses." By Bernard M. Drake, M.I.E.E.

January 16.—Award of Prizes and Studentships.

January 23.—President's Address to Students. Presentation of Prizes.

February 6.—"Public Baths and Washhouses." By A. Hessell Tiltman.

February 20.—"Municipal and Public Libraries." By J. M. Brydon and F. J. Burgoyne.

March 6.—"Some Early Christian Churches in Palestine." By A. C. Dickie. Preceded by Business Meeting, including Election of Royal Gold Medallist.

March 20.—"Norman Vaulting in England." By John Bilson, F.S.A.

April 10.—"The Application of Colour to Interior Ornament in Relief." Under the management of the Art Standing Committee.

May 1.—Annual General Meeting.

May 15.—"Nature and Architectural Ornament." By H. Heathcote Statham.

May 29.—"Planning and Construction of Board Schools." By T. J. Bailey.

June 12.—Business Meeting: Annual Elections.

June 26.—Presentation of the Royal Gold Medal.

The annual dinner will be held this year in connexion with the Birmingham Architectural Association, on Friday, December 9, at the Grand Hotel, Birmingham.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—A meeting of this Association was held on the 18th inst., Mr. John Fairweather, Vice-President, in the chair, when a lecture was delivered by Mr. Low, his subject being "Ventilation." The lecturer pointed out how closely the sciences of heating and ventilation were allied. They could not very well be treated separately. Questions regarding the quantity of air required, the cubic space of room necessary per person, and the necessary purity of air fit for breathing, were gone into closely and clearly. Although carbonic acid gas was an impurity, it was more the presence of organic matter that rendered air unfit for breathing. One of the greatest difficulties ventilating engineers had to contend with was the difficulty of ventilating comparatively small rooms without causing a draught, and this, no matter what system was adopted. There were many different systems, but they could all be grouped under either of the headings, "Natural" or "Mechanical." Mechanical methods, again, could be subdivided into Plenum and Vacuum. Mr. Low described each system in turn, referring to different buildings ventilated by such method. The natural system was illustrated by several very interesting experiments, made with small models, and more particularly with a small model of a room. The failure of cowls as foul-air extractors was pointed out. The whole series of experiments tended to show how difficult and uncertain natural ventilation was under certain conditions and circumstances.

GLASGOW INSTITUTE OF ARCHITECTS.—The annual general meeting of this Institute was held on the 18th inst. in the Rooms, Pitt-street—Mr. David Barclay, vice-president in the chair. Mr. C. J. MacLean read the annual report, from which it appeared that the number now on the roll, exclusive of honorary members, is seventy-two. The report proceeded :—Last year, at the request of the Corporation, representatives of the Institute were appointed to consult with a committee of the Town Council regarding the appointment of an architect for a public hall which the Corporation proposed to build in the district of Springburn. After some discussion, in which your representatives recommended the selection of an architect, it was determined that a competition should be promoted, and your representatives, with Mr. A. B. Macdonald, the City engineer, were appointed a committee to draw up the "conditions of competition." These conditions were accepted by the committee, and at their suggestion the Institute intimated its willingness that they should serve also as "conditions of competition" for other halls proposed to be erected in the Cowcaddens and Woodside and Kingston districts, recommending only that in the latter competitions the assessors or some of them should be replaced by other architects not competing. The committee, however, failed to carry the proposed conditions with the Town Council in so far as they referred to the remuneration of the successful architect, and your representatives did not feel at liberty to support the competition under such circumstances without further instructions from the Council of the Institute. It has now been determined to assist the Corporation in their effort to select the best

design from among those submitted, and leave with the Corporation the responsibility of reducing the standard professional remuneration, and the effect such reduction may have in the quality of the designs submitted. In the interests of architecture it was thought this was the most expedient course to adopt. In the report of the council, dated October, 1893, it was stated that the objections lodged by the Institute against the proposed by-laws framed by the Corporation under the "Glasgow Building Regulations Act, 1892," had been withdrawn on the understanding that it was the intention of the Town Council to prepare in a year or two a Building Act for Glasgow more thorough in character than the existing Act, and to consult with the Institute when framing the clauses. The council observe that the Corporation has recently appointed a committee for the revision of those regulations, and the council propose to put themselves in communication with the convener of the committee and refer to the previous understanding with the view of having the opinions of the Institute properly represented in the matter. The council had a correspondence with Mr. Hedley, general manager of the "Glasgow International Exhibition," 1901, regarding the conditions of competition for the buildings. While they regret that their recommendation regarding the rate of commission was not given effect to, as a result of their action it was published that the designs would be reported upon by a sub-committee composed of the professional members and the convener and vice-convener of the Building Committee, and copies of the "plan of ground" and "conditions of competition" were sent free of charge to the architectural bodies in Scotland and the North of England. The designs submitted were fourteen in number, and it must be a gratification to the Institute that both the accepted and the two premiated designs were the work of its members. The loan exhibition of R.I.B.A. prize drawings was held in the rooms from April 23 to 30 last. This year the drawings were exhibited along with the Glasgow Institute prize drawings from the School of Art and Technical College, and with the Glasgow Architectural Association prize drawings. The Council believe that the object of the joint exhibition—that of allowing local students to compare their prize work with that of London—was warmly appreciated, and that its good effects may be considerable. The following were the winners of the Institute prizes this year:—School of Art, Mr. Charles Menart and Mr. David Marshall. Technical College, Mr. Charles P. Barrett. It may be noted that a Glasgow man, Mr. James P. Fulton, gained the Aldwinkle Studentship of £50 for travel in Spain.—The council for the ensuing year was elected as follows:—Messrs. Alexander Petrie, John James Burnet, J. A. Morris, David Barclay, Alex. M'Gibbon, W. Forrest Salmon, Alex. N. Paterson, John Keppie, H. K. Bromhead, Jas. Lindsay, John L. Murray, Alex. Cullen, Miles S. Gibson, Jas. Miller, and A. B. Morrison. Mr. N. Macwhannell was elected a representative to the joint house committee. A vote of thanks to the chairman terminated the proceedings.

Architectural Association of Ireland.—The opening meeting of this Association took place on Tuesday, the 25th, when the President, Mr. Howard Pentland, R.H.A., read his opening address, some portions of which we may be able to print next week. Mr. R. M. Butler, hon. secretary, read the report of the Committee, which set out—"In considering the work of the session as a whole there must of necessity be many imperfections and defects in the working out of a scheme such as the formation of an architectural association, but regard should be had to the fact that great difficulties exist during a first session which require the expenditure of much time and energy to overcome. The hearty support accorded to your Committee by both the senior and the junior members has been such as to greatly encourage them, and leads them to anticipate for the Association a more extended field of usefulness and mutual benefit in the future. Your Committee have had under consideration the question of persons who are not members of the architectural profession engaging in practice. They have unanimously decided that any such person offering himself for membership under the second sentence Clause 4 of the Article of Constitution, as defined in the form of Application B, covenants *ipso facto* not to engage in architectural practice." Mr. Walter Doolin moved the adoption of the report. Mr. W. Kaye Parry seconded the motion, and said the Association filled a long-felt want in their profession. The report was adopted. Mr. Albert E. Murray moved a vote of thanks to Mr. Caulfield Orpen for the admirable way he had filled the chair of President of the Association last year. Mr. George Sheridan seconded the motion, which was adopted.—A Building Construction Class has been formed, which will hold its first meeting on Thursday, November 3, at 22, Clare-street; and also a Class of Design, which will hold its first meeting at the same address on Wednesday, November 2.

Edinburgh Architectural Society.—This Society met on Wednesday the 19th inst.—Mr. W. N. Cumming in the chair—when Mr. P. E. Nobbs read a paper on "Wrought-iron Work." The meeting took place in the workshop of Messrs. Houston & Stewart, smiths, Dundee-street, and a practical illustration formed part of the evening's work. Mr. Kinross, the honorary President, and others took part in the discussion, and the attendance was a large and appreciative one. The paper was illustrated with many drawings and photographs of various types of iron work.

Northern Architectural Association.—The members of the Northern Architectural Association held an excursion meeting on the 22nd inst., when a number of gentlemen were shown over the new premises in course of erection for Messrs. Robinson & Co., printers and lithographers, of Newcastle. There are five floors to the new building, which adjoins the existing premises in Clavering-place. The architect for the new premises is Mr. F. W. Rich, and the contractors are Mr. John Ferguson, brick work, &c.; Mr. Hewitson, slating; Mr. Mansell Gibson, plumbing; Mr. Wm. Ferguson, plastering; and Mr. Laidler, painting.

ARCHÆOLOGICAL SOCIETIES.

London and Middlesex Archæological Society.—A meeting of this Society took place on Saturday, October 22, in Clerkenwell. The first place visited was the Priory Church of St. John, where the Rev. T. W. Wood described the church and its history. It was formerly the choir of the ancient Priory Church, and the square at present facing the west end was the exact site of the old church. He pointed out all traces of original work that remained—viz., the south wall and its windows, and the east end with its perpendicular window, an exact reproduction of the work of Prior Thomas Docwra. The base of one of the original columns is also to be seen. The party next went down into the Norman crypt, which extends under the whole length of the church. The floor has lately been lowered by the removal of earth and human remains, which has facilitated the restoration of some of the bays. It is intended to use the crypt as a parish room. The party next visited the Church of St. Bartholomew the Great, Smithfield, the history of which, and of the recent restoration, is familiar to our readers. The Charterhouse, the last place mentioned on the programme, was next sought. and here the Rev. W. Haig Brown, the Master, read a paper entitled "The Charterhouse in London, 1371-1898." He divided the history into three periods—the Monastery, the Mansion, aud the Hospital periods. The monastery was commenced in 1371 by Michael de Northburgh, Bishop of London, and Sir Walter de Manny. The site was a piece of ground just outside the City walls, a sort of "no man's land," part of which had been used as a burial ground for victims of one of the pestilences that were frequent in those days. The house when completed was inhabited by Carthusian monks, and was named after La Chartreuse, in Savoy, the word "Charterhouse" being merely an English corruption of the French title. The monasteries of this order usually consisted of two cloisters, large and small, and in the case of the Charterhouse, the larger cloister occupied the site of the present school playground. It has now entirely disappeared, but the entrance to the Prior's cell still remains, and a portion of the original chapel is also to be seen. Another interesting remnant of the past is the pair of solid gates that still hang in the chief entrance; whilst the large Guesten Hall, or dining hall, dates back to the sixteenth century. Sir Walter de Manny did not long survive the erection of the monastery, which in 1537 passed with its revenues to King Henry VIII., who in 1545 granted it to Sir Edward, afterwards Lord, North. The last Prior was executed at Tyburn, May 4, 1535. Subsequently the premises were converted into a nobleman's residence, one of the changes effected to secure that end being the removal of the great cloister and the cells of the twenty-five monks. The little cloister, with its guesten-hall, kitchens, and other commodious rooms, was easily adapted to its new purpose, and still remains; the ancient character of this part of the premises being, however, hidden behind a modern facing of brickwork, built towards the end of the last century to preserve the original stonework. In 1565 the Duke of Norfolk purchased the place for 2,500*l.*, and spent a large sum of money on improving it, and much of what he did—notably the minstrels' gallery in the dining-hall—is still to be seen. The Duke, however, like Sir Walter de Manny, did not long enjoy the house he had beautified, for in 1572 he was executed for high treason. In 1611 the property was bought by Mr. Thomas Sutton for 13,000*l.*, and henceforward the place was neither a mansion nor a monastery, but a hospital, or a shelter for the aged and a school for the young; a comfortable home for eighty men in the decline of life, and a school for forty poor boys; and as the revenues increased the number of the men and boys should likewise do so. In 1872, to bring the history to a close, the number of boys had grown so extensively that removal was necessary, and a site was procured at Godalming, where the school now flourishes. The old site was bought by the Merchant Taylors' Company as a new home for their school in Suffolk-lane. Dr. Haig Brown then escorted the visitors over the premises and pointed out the chief features of interest. Among the scholars educated here was Thackeray, who lodged at that time in a house adjoining, in Wilderness-row (facing the Foresters' Hall), and where there is a stone tablet fixed in front of the house recording the event.

Bradford Historical and Antiquarian Society.—The annual meeting of the Bradford Historical and Antiquarian Society was held at the Great Northern Victoria Hotel, Bradford, on Friday last week. Mr. J. A. Clapham presided. The meeting was preceded by the usual dinner. Afterwards the Hon. Secretary (Mr. Thomas Howard) presented the annual Report of the committee. Eight new members had been elected, and the present number of members is 217. After a reference to the last part of the *Bradford Antiquary*, which had been published, the Report observed that the Council felt strongly that that publication justified the existence of the Society, and redeemed it from the strictures which some critical persons were disposed to pass upon it, that it was composed of mere dilettante antiquaries. The Treasurer (Mr. W. Glossop) presented the balance-sheet, and the election of officers was announced as follows:—President—Mr. Jno. Arthur Clapham; Vice-Presidents—Mr. John Jas. Stead, Mr. Jno. Lister, Mr. Thos. Lord, Mr. J. N. Dickons, and the Rev. Bryan Dale; treasurer—Mr. W. Glossop; editorial secretary—Mr. C. A. Federer; corresponding secretary—Mr. Thomas Howard; librarian—Mr. J. B. Scorah; council—Messrs. W. M. Brookes, Jno. Clapham, G. B. Cole, G. Hepworth, T. Mitcheson, R. Poole, W. V. Rhodes, P. Ross, H. Speight, Butler Wood, S. E. Wilson, and H. E. Wroot; auditors—Mr. W. Claridge and Mr. J. W. Turner. The Chairman then delivered an address, in the course of which he observed that the papers for the season were very interesting, and that several important excursions had been arranged. Referring in complimentary terms to the history of Bingley which had been recently published by Mr. Harry Speight, a member of the Council, he remarked that an illustration in that book represented the Runic stone which existed in Bingley Church. It had been suggested that the Society should place the stone on a pedestal, where it would be preserved from further damage.

Electric Lighting, Shrewsbury.—Mr. W. A. Ducat recently held an inquiry at Shrewsbury, in reference to an application which has been made to the Local Government Board for authority to borrow 35,800*l.* for the purchase by the Corporation of the undertaking of the Shropshire Electric Light and Power Company, and for the extension of the works. Mr. H. C. Clarke, Town Clerk, appeared for the Corporation, and Mr. Spearman (instructed by Messrs. Sprott & Morris) for the Shrewsbury Gas Company. There were also present Messrs. T. P. Deakin (Chairman of the Lighting Committee of the Corporation), and Mr. Eddowes (Borough Surveyor).

CENTRAL LONDON RAILWAY.

THE following is the account of the work on this railway sent to us in connexion with the visit of the Society of Engineers on the 11th, as mentioned in our issue of the 15th inst. It is of sufficient interest to give entire :—

The constructive work of the Central London Railway was divided into six contracts. Beginning at the West End at Shepherd's Bush, the first three contracts were let to Mr. John Price, whose work extended to the Marble Arch. From thence to the General Post Office includes two contracts, both of which were secured by Messrs. Walter Scott & Co., of Newcastle-upon-Tyne. Contract No. 6 extended from the General Post Office to the Bank, and was let to Mr. George Talbot. This includes the General Post Office station and the Bank terminus, as well as the important work beneath the roadway in front of the Mansion House.

The line runs throughout almost entirely in the London clay, the exceptions being where it passes up through the gravel at the western end, and also the length extending from Berners-street, Oxford-street, to Red Lion-street, Holborn, where the tunnels run along the line of junction between the Reading Beds and the Clay. The former consist of green and red marl, with patches of rock, but, not being water-bearing, compressed air is not required for the working. Air at moderate pressure was, however, used where the tunnels come to the surface at Shepherd's Bush. A part of the line which has received a good deal of consideration is that which crosses the Holborn valley and runs under the Viaduct. Here the tunnels keep in the Clay even in passing under the site of the old Fleet Ditch, but the dip of the ground naturally brings the line closer to the surface. In consequence of this and the superincumbent pressure of the Viaduct, it was determined to use compressed air along this section as a matter of precaution, and not with any idea of excluding water, which it was not anticipated would be met with.

The line consists of two tunnels for the up and down lines respectively. The usual diameter of these is 11½ ft. inside. Where there are stations the tunnels are enlarged to 21 ft. 2 in. in diameter, so as to take platforms, &c. There are also cross-over tunnels of 25 ft. internal diameter for the purpose of connecting the up and down lines, and affording shunting facilities.

The rail-level in the stations will be 80 ft. to 90 ft. below the surface, and passengers will be conveyed to the platforms by lifts which it is proposed shall be worked electrically. After leaving the stations, the tunnel runs down at a gradient of 1 in 30 for a distance of about 300 ft., whilst the gradient in approaching is 1 in 60 for about 600 ft. This puts the stations about 10 ft. higher than the main length of line. The figures vary somewhat, but those given may be taken as general.

Starting at the surface, the first operation is the sinking of the shafts, which, in the completed work, will give passengers access to the line. In each station there are two shafts, each 23 ft. in diameter, and one of 18 ft. diameter, and as the company have taken as little surface land as possible on the line of route where land is so supremely valuable, the site is pretty well crowded, the shafts occupying about half the available area. The shafts are lined with cast-iron, and the first part is put in by bolting the segments together and sinking the rings bodily by means of weighting—baulks of timber being placed across for the purpose—whilst excavation is carried on from the interior. No great weight is required to sink the rings, the gravel being fairly free as a rule. When the clay is reached, and has been penetrated for a foot or two under-pinning is started; the clay being removed to the net diameter of the shaft and the segments lowered down and put in position singly beneath the work already in place. Each ring, as completed, is grouted at the back to fill up any space between the iron and the earth. The bottom of the shaft is formed by 2 ft. or 3 ft. of concrete. All shafts were sunk by the aid of steam locomotive cranes.

When the shaft is finished, the head-gear, which is to be used throughout the tunnelling operations, is erected. At the Post Office station steam winches are used for raising and lowering the temporary cages in the shafts, but at the Bank and other stations hydraulic lifts are used, the power being taken from the mains of the London Hydraulic Power Company. At all stations every precaution is taken to avoid creating any nuisance by noise or otherwise to the surrounding householders. The clay is brought up in ordinary tubs by the cages on to a raised platform, and tipped through tumblers into the carts. The bulk of the spoil is taken to wharves on the river, to be carried by lighters to Barking, where it is being deposited for reclamation purposes. Of the iron lining for the tunnels, bricks, lime, cement, &c., about 60 loads per day of 24 hours are, on an average, sent down at each station.

The permanent passages of the stations, which will afford accommodation for passengers, leave the lifts at a height of about 10 ft. above the rails. It is therefore necessary in all cases to drive a temporary passage at the level of the rails in the tunnel. These passages are of 8 ft. internal diameter, and have all been iron-lined. On the line of tunnel being reached, a break-up is formed, and a cylindrical chamber, iron-lined, is constructed, in which to erect the tunnelling shield. This chamber, which is, in fact, the first part of the tunnel formed, is 15 ft. in diameter and 7 ft. long, being somewhat larger than the tunnel proper. In this chamber the shield is erected. The shields used in constructing the tunnels have worked admirably throughout. They are of two kinds, namely, a large shield 22 ft. 10 in. outside diameter, which is used for the stations, and a smaller shield, the ordinary diameter of which is 12 ft. 8 in., although there is a slight variation in the latter, in order to meet the case of tunnels requiring to be made of larger diameter in parts of the line that are on a curve, and where, therefore, extra clearance has to be allowed to the rolling stock.

The length over all of the station shield is about 6 ft. 10 in. The shell or skin is formed of strong steel plates carefully fitted and strongly riveted together, and strengthened by two strong cast-iron rings. Each ring is made up of twenty-two segments, the joints of which are accurately machined and strongly bolted together, the front ring forming a cutting edge. The inner ring forms the main body of the shield, on which are fixed twenty-two hydraulic rams. Between these two rings comes a strong steel diaphragm plate, to further augment the rigidity of the whole. The rams each consist of a ram with its cylinder or case, and a cross-head for the end of the ram, the latter of which is formed to bed on the flange of the tunnel rings. The rams are coupled together, and are in communication with hydraulic pressure pumps by means of a series of pressure and return pipes, in which are fixed shut-off valves to each ram, so that any one or more rams may be disconnected, and the direction of the forward movement of the shield thus controlled. In these pipes are also placed two reversing valves, the use of which is to direct the flow of pressure water so as to either force the rams in or out as required. The return water from the ram cylinders is delivered back into the supply tanks of the pressure pumps, so that it is used over and over again.

The structure of the shield is further strengthened by two vertical and three horizontal stringers formed of steel plates and channels, these being strongly connected at their ends to the body of the shield. The station-shields are provided with what are called hydraulic-erectors, that are used for lifting into position the segments of the cast-iron rings forming the tunnels, ready for bolting together in their permanent position. The erectors consist of an hydraulic lifting-cylinder pivoted on a strong centre, which is securely bolted to one of the vertical stringers. The lifting cylinder is fitted with a ram, which has a head on the end of it so constructed as to be readily attached to the tunnel ring-segments. There are two turning rams attached by chains to a wheel on the pivot of the lifting-cylinder, by which means the latter is turned to any required position. The erectors are operated by suitable valves geared up to handles conveniently placed on the floors of the shield.

The operation of the shield may be described as follows :—When the ground in front is sufficiently removed to allow the shield to be pushed forward, the water-pressure is admitted to the rams, the heads of which are against the last ring of tunnel-plates put in. As the rams move outwards they push the shield forward. After they have made a full stroke, the shield has been advanced a sufficient distance to allow a ring of tunnel-plates being put together in the back portion of the skin of shield after the rams have been forced back into their cylinders. The ring of tunnel-plates is then securely bolted together and to the last ring, and the operation for the getting in of the next ring proceeded with.

The small or ordinary tunnel-shields are similar in construction to the large station shields. This skin is formed of two thicknesses of steel plates, the total length of the shield being 7 ft. The front or cutting-end is formed of a strong, circular cast-iron ring, divided in halves, on which are secured steel knives, made in short segments, and forming a perfectly true circular cutting-edge. The knives are so arranged that they can be adjusted to cut a slightly larger diameter than the body of the shield, if necessary. Behind the cutting-edge ring comes a strong bulkhead, in which is a heading-out hole 6 ft. 6 in. high by 5 ft. 3 in. wide. At the back of the bulkhead there is a strong ring of cast-iron made in six segments, having flanges which form the joints between each segment. These joints are securely bolted together, and the ring is also well bolted to the skin of the shield. On this ring are secured hydraulic rams similar to those on the large shields, one on each segment of the ring, or six in all. These are connected by pressure and return-pipes to two hand-pumps, each fixed to strong water-tanks securely bolted into the shields. The working of these rams is the same as that described for the large station-shields. The hand-pumps are fitted with compound-rams, one ram being larger than the other. The object of this is that by a simple arrangement the larger rams can be operated, while the pressure required is not excessive, as is always the case when the rams are only being pumped in after having advanced the shields to their full length; and sometimes when the shield is in places where the resistance to its progress forward is not excessive. The movement of the shield by the larger rams is naturally much faster than when the smaller ones are used. When greater pressure is necessary, the smaller rams are thrown into gear, thus making the working of the pumps lighter, but the movement of the rams is correspondingly slower. Each hydraulic ram is fitted with a shut-off valve as described for the large shield, and a reversing-valve is also used, so that the rams can be moved outwards or inwards as desired, the return water being delivered into the pump tanks as it leaves the ram cases.

In operating the ordinary tunnel-shield, after it has been erected in the chamber provided, the first thing to do is to drive a heading in advance 7 ft. or 8 ft. If the ground be hard, the whole of the clay is removed in front of the shield for the distance of one ring, or 20 in., with the exception of an annulus of from 1 in. to 2 in., which is left for the cutting-edge of the shield to take away. Before the shield is moved forward a number of pointed pieces of timber are placed horizontally in front of the shield, their pointed ends being inserted in the face, and their other ends abutting on the shield. As the latter is forced forward by the hydraulic-rams, the clay is loosened by these piles, being broken down into the heading, and the miners then get through the shield and remove the earth. When the shield has been pushed forward sufficiently far by the rams—the latter pressing against the completed end of the iron lining as an abutment—the next ring of lining is erected inside the tail of the shield, and, having been bolted up, the shield can be again moved on. The annular space between the earth and the iron lining, left by the advance of the shield—it being remembered that the ring of the lining is erected inside the tail of the shield—is filled up by grouting, which is forced through holes purposely made in the lining by means of compressed air.

The rate of progress varies from two to four rings erected per shift, or from 40 in. to 80 in. completed for ten hours' work.

The method of working the larger shield is not greatly different in principle to that of the smaller one, excepting that no advance heading is driven. The interior of this shield is divided up by two vertical girders and three horizontal platforms, and there are the rams with tables supporting the face, as already stated. The earth is removed from the face by hand, and is thrown on to the platforms, and from thence to the wagons beneath. There are the piles for breaking up the earth, as in the smaller shields. The progress is usually from one to two rings per ten hours, but the rings are 18 in. long.

At the Bank Station the general arrangement of shafts and tunnels is the same as at other stations, but the upper station or booking hall is, from its situation, of an exceptional character. By agreement with the City Corporation the station is situated below the open space in front of the Royal Exchange, the railway company constructing, for the public use, a system of subways and stairways connecting the various streets which meet at this point.

By this arrangement, pedestrians desiring to cross the roadway will be able to do so without incurring the risk and delay now so notorious.

The main or public subway which surrounds the station is 15 ft. wide, and will be lined with white tiles and lit by electricity. Under this public subway is placed another in which are arranged all gas and water mains, telegraph lines, &c., which formerly crossed the street in all directions. This will obviate the necessity of disturbing the roadway for repairs of pipes and the like.

In the central space is the booking hall or upper station of the railway, which, except that its floor level will be some 16 ft. below the street, and consequently that its roof will carry the City traffic overhead, is similar in its arrangements to the other stations of the line, and from it lifts will carry the passengers to the platform below.

METROPOLITAN FIRE BRIGADE.—We learn that the Fire Brigade Committee of the London County Council are actively engaged in carrying out their scheme for improvements, towards which a large sum was voted about eight months ago. New chief stations are to be built at Lee Green, Lewisham, East Greenwich, and South Battersea, together with stations at Vauxhall, Brixton Hill, Camberwell, Roehampton, Highbury, Holloway, Bayswater, Fulham, Kilburn, Limehouse, and other districts. Some existing stations—including those at Hampstead, Whitechapel, Mile End, and the Isle of Dogs—will be enlarged, and plans are prepared for new buildings at Streatham, Paddington, Islington, and elsewhere. An experimental steam fire-engine, after a new kind, is to be tried, and if it is found successful, six more like it will be made; whilst fire-escapes, to be drawn by horses, are being supplied, together with a large number of additional alarm-posts for telephonical communication. At the same time steps have been taken to improve the men's quarters, and to render them more healthy and comfortable, at various stations, and to obtain data for the proposed adoption in the City of a system of double hydrants, with 4-in. supply pipes.

Illustrations.

DECORATION FOR ROOM, WALSINGHAM HOUSE.

THIS is a reproduction of a drawing by Mr. Cesare Formilli, which was exhibited at the last Royal Academy, for the wall and ceiling decoration for a room at Walsingham House. The principal element in the decoration, as will be seen, is in the pictorial subjects. The distinction between the character of the wall and the ceiling picture, the first rather heavy and massed in the composition of the figures and trees, the latter treated in a lighter manner with figures floating, is well conceived, though we wish the artist had been content with the figures in the ceiling design, and omitted the objectionable treatment of architectural features in upward perspective; a frequent practice, of course, in decorative ceiling painting, but none the less a mistake.

HOUSE AT FLEET.

THIS house is being built for Dr. Lauder Brunton, on the verge of Victoria Hill, Fleet, and commands views over a wide range of country to the south and west.

The materials used are Rowland's Castle red brick and Broseley Tileries dark red tiles. The walls are built hollow, and the brickwork is built in cement pointed as the work proceeds.

The plan annexed to the view shows the general disposition of the rooms, but is taken from an early sketch. The actual plan has been considerably changed, especially in the hall, staircases, and kitchen offices.

The contractor is Mr. E. A. Roome, and the architect Mr. Howard Ince.

DESIGN FOR A CONVALESCENT HOME.

THIS design for a home for convalescents was sent in competition for the Architectural Association silver medal, and obtained the prize.

The following were the instructions to competitors :—

"A CONVALESCENT HOME ON THE SOUTH COAST.

Accommodation to be provided for ten men, ten women, and fifteen children.

Day rooms for each sex to be on ground floor, and sleeping accommodation over. Play room and covered play shed for children. Small chapel for patients and household, with provision for twenty-five strangers and a small vestry. The position of chapel to be carefully considered with respect to the approaches from the different departments. The dining hall to be used in common, and to be used for entertainments. The entrance hall to be of good size so as to be available for use of committee and visiting doctor, as well as for waiting purposes.

The administrative department to be conveniently and economically arranged and to include sitting room and bed room for Matron.

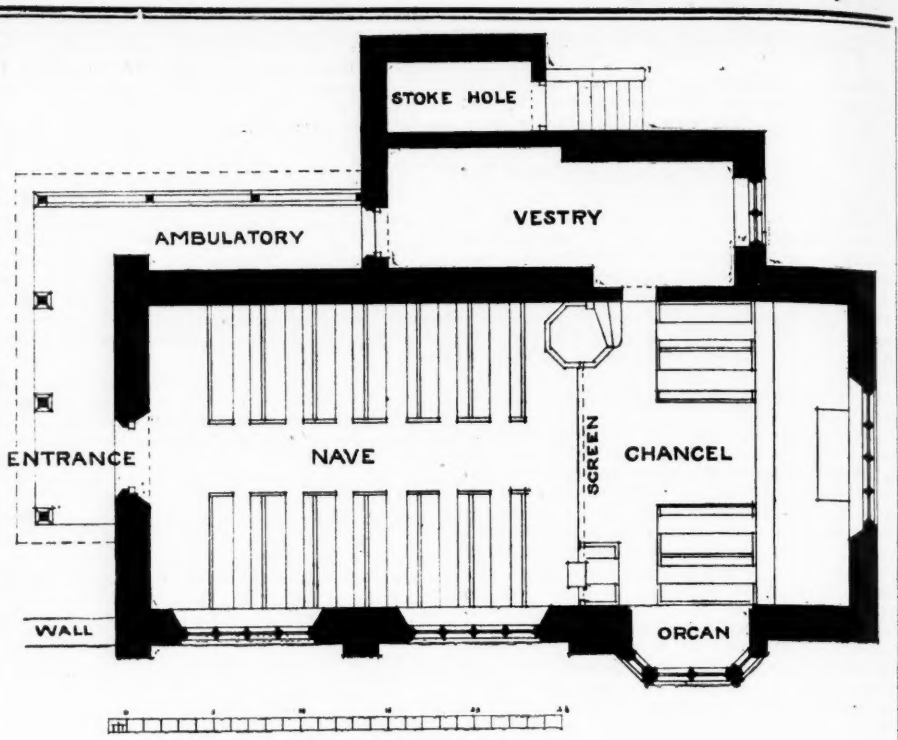
Lavatories and W.C.'s to be provided for each sex on ground floor and first floor, also bath rooms on first floor, all arranged on the best principle.

A small isolation block for sick patients to be placed in a suitable position, and to contain two wards of two beds each, with the usual adjuncts."

The materials proposed are :—Local stone for the walls, rough cast from first floor level, and green slate roofs giving a homely, simple effect and characteristic of the purpose to which the building would be put.

The author of the design is Mr. F. Dare Clapham.

We give the perspective sketch and the two principal elevations, and the ground-floor plan to half the scale of the elevations. We would willingly have given the whole set of drawings but for the economy of space we are obliged to exercise, in consideration of the great number of illustrations we have on hand. We think the design a very meritorious one ; the architectural treatment has the quiet and homelike appearance which is proper to a building of this class, and the plan is well arranged in the main ; perhaps the access to the dining-room is rather circuitous for the women, unless they are to use the covered way by the courtyard, which however seems more of a service corridor. In a case where there is a division between men's and women's side but they are to use the same dining-room, the best arrangement is to have the dining-room so far central that the two can approach it by separate doors from their own quarters. In this case, obviously, the central hall is regarded as a neutral ground where the occupants may meet, and which gives access to either chapel or dining-hall. Two separate staircases ought certainly however, to have been provided. It may be observed also that the side windows of the men's and women's day-rooms overlook each other across the court, which is not an ideal arrangement, though it may be met by filling the side windows with obscured glass. The south bay windows looking over the sea, and the sheltered verandahs facing south, are very good points. We have recently seen plans for an infirmary (by an architect in practice and not a student) where the verandahs in connexion with the day-rooms faced north ; so curiously is the importance of sunshine in such cases overlooked sometimes.



A Private Chapel, Matlock Dale. Plan.

SOUTH PORCH OF ST. NICHOLAS, KING'S LYNN, NORFOLK.

THE drawing of this fine bit of Norfolk Late Gothic work is by Mr. G. J. J. Lacy. The work is very rich in detail, and is a fine example of a class of porch of which a good many are to be found in Norfolk and Suffolk, though not all as elaborately detailed as this.

PRIVATE CHAPEL, MATLOCK, DERBYSHIRE.

THIS chapel, the fabric of which was completed early in 1897, is beautifully situated high up on the side of the hill overlooking Matlock Dale and the Valley of the Derwent. Advantage was taken of an existing retaining wall, beneath which the road runs, and upon which one side of the chapel is built. Behind, the hill, thickly covered with trees, slopes rapidly upwards, so that it is only from below or the hills opposite that the building can be seen.

It is built of local grit stone, with the main roof covered with old stone slates, and the bell cote and ambulatory oak shingled. The fittings and panelling inside are of oak throughout, the chancel floor of black and white marble, and in the nave under the seats wood block. Inside the walls are lined with thin red brick and the ceiling semi-octagonal in shape, treated with wide bands of modelled plaster, is now being decorated in colour by Mr. Louis Davis.

Though for some time past the chapel has been used daily, yet much remains to be done, and it will be some considerable period before the building can be said to be complete.

The main portion of the work was carried out by Messrs. Parnell & Son, of Rugby, but the later additions by Messrs. J. & W. Lewis, builders, of Matlock, together with other workers in London and elsewhere.

The architect was Mr. E. Guy Dawber, of London.

COMPETITIONS.

MUNICIPAL BUILDINGS, GODALMING. — In this competition the design No. 1, by Messrs. Lanchester, Stewart, & Rickards (Bloomsbury square, London) has been placed first by the assessor ; design No. 6, by Mr. E. R. Robson (Westminster), has been placed second ; and design No. 2, by Messrs. Ardron & Dawson (also of Westminster), has been placed third. Mr. Mountford was the assessor, and in his Report he says "without doubt the design No. 1 is altogether superior to the other seven. It has a good plan, treated simply but most artistically both inside and out. The front elevation is extremely satisfactory." The Report, while mentioning that the authors of all the designs express the opinion that their design can be carried out for the sum allowed, adds "If you can allow more money, or omit some of the secondary buildings, it would be very advisable to do so. Municipal buildings should be, before all others, thoroughly substantial and dignified" ; an opinion with which we entirely agree.

CALIFORNIA UNIVERSITY COMPETITION.—In addition to the names of competitors given in our last, who were decided upon unanimously by the jury, some of the jurors recommended that four other designs should be purchased for possible use for the University of California. The authors of these four designs were Messrs. Joanny Bernard & Robert (Paris) ; Charles des Anges (Paris) ; Ernest Flagg (New York) ; and F. Skjold Neckelmann (Stuttgart).

WORKHOUSE, WEDNESFIELD.—The Wolverhampton Board of Guardians, meeting in Committee, considered on the 21st inst. the reports which had been prepared with regard to the erection of a new workhouse at New Cross, Wednesfield. After deliberation the Board adopted the recommendations of Mr. Aldwinckle, the assessor, with regard to the plans. It was decided to recommend the Board to employ Mr. A. Marshall, of Nottingham, whose plans were awarded the first position by the assessor, as the architect for the new building ; and to pay 200*l.* to Messrs. Mangnall & Littlewood and Mr. M. Johnson, the fees agreed upon for their plans, and 100*l.* to Mr. Doubleday, of Birmingham, for his plans, according to the order of merit. It was also recommended that the present farmhouse on the estate be not retained, and that a separate chapel should be erected.—*Birmingham Post.*

REBUILDING OF THE KING-STREET AREA, GLASGOW.—The result of the competition for the rebuilding of the King-street area under the new Improvement Act is announced. Three designs, titled respectively "Comfort and Economy," "Melior," and "Red Cross" were selected, and on the report of the measurer being obtained, it was decided to award the three premiums of 100*l.*, 50*l.*, and 50*l.*, to the authors of the designs in the order

named. On opening the envelopes it was found that "Comfort and Economy" was by Mr. John M'Kissack, 68, West Regent-street; "Melior," by Messrs. Thomas Dykes & Robertson, 65, West Regent-street; and "Red Cross," by Mr. R. W. Horn, 201, Kent-road. The Committee, after further deliberation, resolved to recommend as follows:—(1). That the area be reconstructed in conformity with Mr. M'Kissack's No. 1 scheme, subject to such alterations or variations thereon as the Committee may hereafter determine. The estimated cost of carrying out this scheme is 31,660*l.*, and the estimated rental from the proposed buildings is 2,996*l.* (2). That Mr. M'Kissack be employed as architect for the erection of the buildings. (3). That it be remitted to Councillors Chisholm (Convener), Calderwood, Dick, and M'Phun, as a special sub-committee, to confer with Mr. M'Kissack as to the carrying out of his scheme, and (4) that arrangements be made for the inspection of the premiated designs by such members of the architectural profession as may wish to see them.

Fire Brigade Station, Bradford.—At a meeting of the Fire Brigade Sub-Committee of the Bradford Watch Committee on the 21st inst., the instructions to be issued to architects in connexion with the invitation for competitive designs for the new fire brigade station were drawn up. The competition will be open to architects throughout the country, and the Committee are offering premiums of 100*l.*, 50*l.*, and 30*l.* for the three best designs.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

Lines of Frontage.

Dulwich.—One-story shops in front of Nos. 68 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, and 94, Lordship-lane, Dulwich (Mr. R. A. Hinds for the London and South Western Bank, Limited, Mr. G. H. Judd, and Mr. Castle).—Consent.

Dulwich.—One-story additions upon part of the forecourts of the "Walmer Castle" Tavern and No. 100, Peckham-road, Dulwich (Mr. J. W. Brooker, for Mr. G. J. Brown and Mr. J. Adams).—Consent.

Width of Way.

Hackney, Central.—A warehouse on the site of Nos. 1, 2, 3, and 4, Grove Cottages, Grove-lane, Hackney (Mr. J. Hamilton for Mrs. Siegenberg).—Consent.

Clapham.—Stabling on the east side of Green-lane, Lavender Hill, Battersea (Mr. W. C. Poole for Mr. J. Stanley).—Consent.

Kensington, South.—An addition at the rear of the "Macaulay Arms," Silver-street, Notting Hill, to abut upon Peel-street (Messrs. Treacher, Son, & Fisher for Mr. J. H. Davy).—Consent.

Poplar.† —A dwelling-house on the west side of Cottage-street, Poplar, to abut upon Finch-court (Mr. J. Fox).—Consent.

Width of Way and Projection from Building.

Chelsea.—An external iron escape-staircase on the east side of the south block of the Hospital for Consumption, Fulham-road, to abut upon Arthur-street (Messrs. Karslake & Forrester for the hospital authorities).—Consent.

Excess of Cubical Extent.

City of London.—The erection, on the north-west side of Charterhouse-street, City, of a building on the roof of the Smithfield Market electric lighting station, such new building to exceed in extent 250,000 cubic feet, and to be used only for the provision of cold storage in the immediate vicinity of the central market (Mr. C. S. Peach for Mr. J. Van den Bergh).—Refused.

The recommendation marked † is contrary to the views of the Local Authority.

BOOKS RECEIVED.

Disinfection and Disinfectants. By Samuel Rideal, D.Sc. (The Sanitary Publishing Company.)

Fall of a Church Steeple.—A few days ago at Feltwell, in Norfolk, the tower of St. Nicholas Church, which was under repair and girt round with scaffolding, suddenly swayed and fell into the churchyard.

* Names of applicants are given in brackets. Buildings new erections unless otherwise stated.

The Student's Column.

SOUND, LIGHT, AND HEAT.—XVII.

LIGHT: SOURCES.

Most of the light on the earth comes from the sun; but in lesser degree we have as natural or artificial sources, as the case may be, the stars, heat, chemical combination, electricity, meteoric phenomena, and phosphorescence. The quantity of light from the stars is not much, yet sufficient to produce many important results in photography, amongst other things. Terrestrial bodies may become light-giving when raised to a sufficiently high temperature, the light becoming brighter as the temperature is higher. In the same way, light is evolved in many chemical processes by the heat given out during chemical combination. The light yielded by various electrical processes—by friction, by voltaic batteries, by dynamical electricity, &c.—cannot be considered here, as it belongs, strictly speaking, to a branch of physics beyond the scope of this series; and we are not seriously concerned by the light yielded spasmodically by meteorites or the aurora. We may say a few words, however, on lightning, and the protection of buildings from that phenomenon. And we must go into some detail in regard to phosphorescence and fluorescence.

Lightning.

It is difficult to describe this phenomenon in a few words, but, briefly, we may remark that it was long ago discovered that the electricity of a thunder-cloud is identical with that obtainable from an electrical machine. In the official "Instructions" on the use of meteorological instruments observers are told that it is always found that very little electricity can be observed near the ground, and in order to obtain satisfactory indications the conductor of the electroscope (for determining electrical state) should be brought into contact with the air at some distance from the earth's surface, by means of a collector, or otherwise. A method which has been in use for many years is where the electricity is collected by means of a flame burning at a height, either in a lantern hung to an insulated mast and connected to the electroscope by a wire, or by a slow-burning match attached to the top of a long metal rod. The electricity of the air in the neighbourhood of the flame, by its inductive action upon the conductor, causes electricity of the opposite nature to accumulate at the upper extremity, where it is constantly carried off by the convection currents in the flame, leaving the conductor charged with electricity of the same kind, and potential, as the air.

Other means have been employed for collecting electricity, the more prominent of which are based on the method just described. One of these is known as the Thomson water-dropping collector, largely used in observatories of the first order. As to the position of the collector, since electrical density is greater on projecting surfaces, and less on hollow surfaces than on planes, the collector should not be near trees or houses, nor within a closed space.

The principal results, obtained by the use of electrometers, as ascertained by Quetelet,* are as follows:—

1. The diurnal march of electricity, at a constant height above the ground, exhibits two maxima and two minima. The maxima fall at about 8 a.m. and 9 p.m. in summer, and about 10 a.m. and 6 p.m. in winter. The day minimum occurs at 3 p.m. in summer and 1 p.m. in winter.

2. The variations of electricity precede by about an hour those of the barometric range. The maxima occur at the periods of most rapid change of temperature, whilst the day minimum coincides with the period of maximum temperature and minimum humidity.

3. The annual march of electricity presents one maximum in winter and one minimum in summer; and at Brussels, where the results were arrived at, the phenomena were found to be thirteen times more active in January than in June.

Although there are exceptions, the potential of the air is positive; clouds may be, and are, electrified either positively or negatively, and the sign of the electricity recorded close to the ground will be affected accordingly. During a thunderstorm the changes in potential and sign of electricity are so violent and rapid that the photographic method commonly adopted has, until recently, proved almost a failure, and even now the results leave much to be desired.

Turning now to the phenomenon as a light giver, we may say that there are three principal kinds of lightning, viz.:—1, zigzag or forked; 2, sheet; and 3, globular. The first-mentioned is the discharge which takes place between two oppositely electrified bodies, or bodies differing widely in potential, and is precisely similar in character to the spark from an electrical machine. Sheet lightning is the illumination produced by distant electrical discharges; but it is occasionally produced by an actual lightning flash being discharged from behind a cloud, when only the edges of the latter are fringed with light. Globular lightning, a rare phenomenon, is a luminous sphere varying in diameter from a few inches to two or three feet, which moves slowly near the surface of the ground, remaining visible for several seconds, or even minutes, and usually disappearing by exploding with great violence.

In discussing the principles of protecting buildings against lightning, Dr. R. J. Mann* observes that when a copper conductor has been properly applied to the walls of a building its efficacy as a protection in large measure depends upon the fact that when a lightning-charged cloud hovers in the air a little distance above the top of the rod, it becomes charged with electricity of an opposite kind to that in the cloud. There is, consequently, a strong tendency for the charge in the cloud to pass into the rod, and for the charge in the rod to issue to the cloud. If in such circumstances the tension becomes so strong that the charges can leap across the intervening gap of air, a flash of lightning occurs: but as, in obedience to the direction of the tension, it goes at once into the rod, it there finds an easy path prepared for its transmission to the earth, and traverses this path without producing any mechanical disintegration between the molecules of the conductor. Such is, essentially, the service which the conductor renders when an actual stroke of lightning takes place. It affords an easy and open channel which the lightning is quite sure to take in preference to the more difficult task of making its way through the impeding and resisting structures of the building. But there is another way in which the lightning conductor also contributes to protection. It lessens the tension, and so diminishes the striking power of an approaching storm cloud. In every case the lightning-conductor is so planned that it terminates above either in a point or in a cluster of points, often arranged radially. The main stem down the building is a copper rod; and it terminates in the earth, where it is considerably enlarged in various ways, depending upon the particular conductor, so that the outlet shall be adequate. A lightning-rod with an insufficient earth contact is not only useless, but dangerous, as it is more likely to lead incidentally to severe electric discharges on the building than the latter would receive were it not provided with a conductor.

In wiring large buildings many conductors are commonly employed; in all the principle remains the same. But we have no intention of entering deeply into the matter; the student is referred for further particulars to various papers in the "Quarterly Journal of the Meteorological Society" particularly those by Dr. Mann, one of the most interesting of which will be found in vol. ii., p. 428. That society has organised conferences on the subject and published codes of rules. The history of the subject is well chronicled by Mr. Richard Anderson, in his treatise on lightning-conductors; whilst the meteorological aspect is admirably epitomised in the work of Mr. R. H. Scott, already quoted.

Phosphorescence.

Certain bodies are luminous in the dark, without the phenomenon being accompanied by any perceptible rise in temperature, and because this luminosity is well shown in phosphorus it is called phosphorescence. This property is to be observed in all the three kingdoms of nature, being exhibited in animals both living and dead, by vegetables, and by minerals. Mineral phosphorescence is the most interesting to us. Every architect has heard of Balmain's luminous paint, with which it was proposed, amongst other things, to paint

* "Elementary Meteorology." By R. H. Scott. Third Edition, p. 171

* Article in "Science for All," p. 158.

the interior of railway carriages so that, the paint absorbing the sunlight, it became luminous, and faintly lighted up the compartments on the train passing into a tunnel. The practical applications of the material are almost endless, though we do not hear much about them yet. Professor Balmain's patent was for mixing phosphorescent substances with any vehicle that will form what is commonly called a paint, wash, or varnish. If a surface coated with this paint be exposed to the direct rays of the sun, and is then removed to a dark room it shines with a violet light, and this may be done repeatedly with the same effect. This is an example of what physicists call insolation. The basis of this paint is sulphide of calcium, or Canton's phosphorus, but a number of other substances could be employed in lieu thereof. The paint may likewise be excited by holding it close to a gaslight, but it will be found that after a few experiments the paint has lost its phosphorescent property owing to the absorption of the heat rays. Commenting on this circumstance, Ackroyd observes that this antagonism of the heat radiators to the manifestation of phosphorescence after insolation was known as long ago as the year 1775. Wilson pointed out that the rays of the violet end of the spectrum, where there is least heat, cause a vivid phosphorescence in the sulphide of calcium, whilst the rays at the red end, where there is most heat, cause the phosphorescence produced by the other rays to cease. The phosphorescent sulphide of calcium was prepared by Canton by heating intensely for one hour a mixture of three parts of sifted calcined oyster-shells with one part of sulphur, whilst the original Balmain's paint was made by heating together lime and sulphur, and the product is then, for painting purposes, mixed with mastic varnish and a little turpentine. Ackroyd remarks that the nature of the light emitted varies with the method employed to prepare the sulphide, an orange-coloured phosphorescence being obtained from sulphide of calcium prepared from oyster-shells; whilst the light is much more refrangible and bluish when the sulphide is made from carbonate of lime which has been precipitated.

Other substances which become phosphorescent by insolation are the diamond, the following salts of lime—the nitrate, carbonate, phosphate, and arseniate; also sulphide of barium, or Bologna stone. None of these bodies, nor sulphide of calcium, are long phosphorescent after insolation; though this latter and sulphide of strontium will yield light for 30 hours. Heat will produce phosphorescence in some bodies, such as fluor spar, a variety of that mineral emitting light at a temperature so low as 20 deg. to 25 deg. Cent.

The phosphorescence seen in tubes from which the air has been exhausted, will be fresh in everyone's mind, as the outcome of the experiments of Crookes, but that appertains more particularly to the electrical side of physics, though we shall incidentally deal with the Röntgen rays, in their applications to practical photography.

Phosphorescence may be manifested as a mechanical effect, by friction, percussion, cleavage, and the like. In the case of bodies whose phosphorescence lasts only a short time the phenomenon is experimented with by an apparatus known as the phosphoroscope, by means of which bodies can be viewed immediately after being exposed to the light; the interval between insolation and examination may thus be very accurately determined. Uranium compounds present the most brilliant appearance in this apparatus.

Fluorescence.

This phenomenon, which is so closely related to phosphorescence as to lead some scientists to believe it to be identical, is not interesting to us so much as a source of light as a modifier of it. Many years ago Stokes made the discovery that under certain circumstances the rays of light are capable of undergoing a change of refrangibility. Ganot (*Op. cit.* p. 569) says that the discovery originated in the study of some varieties of fluor spar and also the solution of certain substances which, when looked at by transmitted light, appear colourless, but when viewed in reflected light present a bluish appearance. It appears that fluorescence is due to an absorption of certain rays; rays of light which have passed through a sufficient thickness of a fluorescent substance lose thereby the power of exciting fluorescence when they are passed through a second layer of the same substance.

The same author notes that if a few drops of a strong solution of fluoresceine in soda fall into a large beaker of water on the front of which the sun's rays fall, beautiful fluorescent clouds are first produced, and, on shaking the liquid, the whole vessel fluoresces with a bright green light. This change arises from a diminution in the refrangibility of the extra-violet rays, which are, ordinarily, too refrangible to affect the eye. Glass appears to absorb many of these more refrangible rays. Ackroyd* observes that if the very short wave radiations which have their place beyond the violet portion of the spectrum be absorbed, we may have chemical action, as in the change wrought in compounds of silver, which is utilised for photographic purposes; and such absorption may give rise to the light emitted by such substances as Balmain's luminous paint.

OBITUARY.

M. Puvis de Chavannes.—This great French painter died on Monday last, his death following that of his wife by only a few weeks, and being probably hastened by his grief for her loss. Puvis de Chavannes was born at Lyons, on December 14, 1824. He studied successively under Ary Scheffer and Couture, whose influence was very perceptible in his early work. He soon, however, began to strike out a new path for himself, and commenced that succession of symbolical paintings in a severe and monumental style, the excellence of which was recognised from the first. He received medals in the Salons of 1861, 1864, and 1867, was made officer of the Legion of Honour in 1877, and Commander in 1869. In 1882 he received the Medaille d'Honneur of the Salon. His works are very numerous. Among his Salon exhibits may be named—in 1850, a "Christ Mort"; in 1859, "Retour de Chasse," a mural painting now in the Museum of Marseilles; in 1861, two paintings under the titles "Bellum" and "Concordia," intended for the Museum of Amiens; in 1864 "L'Automne" (Lyons Museum); in 1865 "Ave Picardia Nutrix" (Amiens Museum); in 1867 "La Guerre," "La Paix," "Le Travail," "Le Repos" (also in the Amiens Museum); in 1869, "Massilia, Colonie Grecque," and "Marseille, Port d'Orient," decorative paintings for the Marseilles Museum; in 1874 "La Victoire de Charles Martel sur les Sarrazins" and "Ste. Radegonde Donnant Asile aux Poètes," for the Hôtel de Ville of Poitiers; in 1876, "Vie de Ste. Géneviève" for the Panthéon; in 1879, "L'Enfant Prodigue"; in 1881 "Le Pauvre Pêcheur" (at the Luxembourg); in 1882, "Pro Patriâ Ludus" (Amiens Museum), and "Doux Pays," a decoration for the house of M. Bonnat, the painter; in 1883 "Le Rêve"; in 1884, "Le Bois Sacré Cher aux Arts et Aux Muses" (Lyons Museum); in 1885 "L'Automne," a variation on the work of the same title at the Lyons Museum; in 1886, "Vision Antique," "Inspiration Chrétienne," and "Le Rhône et La Saône" (Lyons Museum); in 1887 "Decoration de l'Amphitheâtre de la Sorbonne," published in the *Builder* of July 2 of that year; in 1880, "Inter Artes et Naturam" (Museum of Rouen); in 1891 "L'Eté," for the Hôtel de Ville of Paris (published in the *Builder* of January 7, 1893); in 1892, "L'Hiver," also for the Paris Hôtel de Ville; in 1894 the decoration of the grand staircase of the Hôtel de Ville, the ceiling representing "Victor Hugo offrant sa lyre à la Ville de Paris" (published in the *Builder* of June 2 of the same year); in 1895 and 1896, the decorative paintings for the Boston Library, consisting of "Les Muses Inspiratrices" and figures of Virgil, Æschylus, and Homer, and of History and Astronomy; in 1897 "Ste Géneviève ravitaillant Paris," for the Panthéon; and in 1898, "Ste Géneviève veillant sur la Ville Endormie," also for the Panthéon (in this year's Salon). The Amiens Museum possesses also other works of his—"Le Moissonneur," "Le Desolation," &c. This partial enumeration of his principal works only, nearly all of them on a very large scale, gives some idea of his immense labour. Theophile Gautier said of him that in an era of prose and realism, he remained epic, heroic, and monumental. Another French critic, Paul Mantz, happily remarked that with him painting ceased to be noisy and became calm, and "le silence des contours permet de percevoir plus aisément le murmure de la Pensée." With all his genius, Puvis de Chavannes was a quiet, modest, retiring man, but also a man of the greatest elevation and dignity of character, and much endeared personally to those who knew him in private life.

M. Lenepveu.—France has lost another eminent painter by the death of M. Lenepveu, at the age of seventy-nine. Jules Eugène Lenepveu was born at Angers in 1819, and was a pupil of Picot. In 1869 he was elected a member of the Institute in place of Hesse, and in 1876 was appointed Director of the French School at Rome. His greatest work, and that by which he is best known, is the decoration of the ceiling of the Paris Opera House with the subject "Les Heures du Jour et du Nuit." He also carried out at the Panthéon the mural paintings which had been allotted to Baudry. Among his other works may be mentioned "Les Martyrs aux Catacombs," at the Luxembourg; the "Vierge au Calvaire," in the museum at Nantes; "St. Saturnin," "David Crowned by Samuel," "Christ in the Prætorium," "Alexander and his Physician," (in the museum at Angers). He painted twelve pictures for the chapel of the Hospice at Angers; he also decorated the chapel of St. Denis in the church of St. Louis, the chapel of Ste. Anne in St. Sulpice, and one of the transepts of Ste. Clothilde. The Prefecture at Grenoble possesses also four pictures by him, symbolising the four seasons.

* "Science for All."—Fluorescence, p. 188.

Mr. J. F. Fawckner.—On the 19th inst. Mr. J. F. Fawckner, architect, died at his residence, Park-place, Newport, from syncope. The deceased gentleman, who was in his seventieth year, was head of the firm of Messrs. Habershon & Fawckner, architects to the Tredegar Estate. Mr. Fawckner was a native of Devon, and his home was in the neighbourhood of Bideford. He served his articles with Mr. W. G. Habershon, of London, and in 1857 he was sent to Newport to take charge of the Newport branch of the firm's business. He was ultimately taken into partnership, and for many years the firm had offices in London, Cardiff, and Newport, but on the death of Mr. Habershon, which occurred some seven years ago, Mr. Fawckner became the head of the firm, and the London office was given up. Mr. Fawckner leaves a widow and two sons and two daughters. Both the sons are partners in the firm of Habershon & Fawckner.—*South Wales Daily News.*

Mr. J. Darlington.—On the 20th inst. the death occurred of Mr. Jos. Darlington, of the firm of Messrs. W. & J. Darlington, builders, contractors, &c., of Hexham. The deceased, who, along with his brother, Mr. Wm. Darlington, had been in business about thirty years, was in his sixty-seventh year.

GENERAL BUILDING NEWS.

Parish Church, Swansea.—On the 20th inst. the Archbishop of Canterbury re-consecrated the Parish Church of Swansea, which has been rebuilt at a cost of between 25,000*l.* and 30,000*l.* The old church was so dilapidated that it was impossible to attempt any satisfactory work of restoration. The nave only dated back to about 1739, and, though the chancel and tower were probably about fourteenth or fifteenth century work, they possessed no features of sufficient value, it is stated, to hinder the much-needed rebuilding of the entire church. The old building was also too small, and in many parts unsafe. The new church, in the Early English style, was commenced in December, 1895. The nave was opened in August, 1897. The tower, which is up about 35 ft., is to be finished next spring. The nave has been lengthened at the west end by 26 ft., is 60 ft. in height to the ridge, and 5 ft. higher than the old tower. The new tower will be 85 ft. high, an increase of 30 ft. upon the old tower. The accommodation will be increased by about 300 sittings, all on the ground floor. The new chancel is the same length as the old one, viz., 58 ft., the east and north walls and those of the Herbert chancel standing on the lines of the old ones, but as it was necessary to widen the chancel to suit the new nave, the south wall and those of the tower and vestries are on new lines, but relatively to the chancel in much the same position as the old ones. As in the case of the nave, local stone has been used for the wallings, with Bath stone dressings. The chancel stalls, which include a special canopied seat for the bishop, are of oak, as also are the roofs and the vestry fittings. The monuments, both ancient and modern, have been retained, and as far as possible have been refixed in or near their old positions. The architect was Sir A. Blomfield.

Church, Bexhill-on-Sea.—A new church (St. Stephen's) is being erected at the Down, Bexhill-on-Sea. St. Stephen's Church is situated at the north-west corner of the Down in Gunter's-lane. The building is to be of brick, with tile roof and Bath stone mullions, &c. Its dimensions will be 125 ft. from east to west, by 60 ft. wide at the nave and 85 ft. at the transept. The portion of the tower now to be erected will be about 40 ft. above the ground level. When the tower and spire are completed the height will be 120 ft. from the ground level. The cost will be about 7,000*l.* Mr. H. E. Cruttenden is the builder, the architect being Mr. H. Ward, of Hastings.

Re-opening of Catholic Church, Dublin.—On the 16th inst. the Church of St. Teresa, Clarendon-street, Dublin, was re-opened after renovation and decoration. The whole of the decoration has been carried out by Mr. J. Clarke, under the supervision of Mr. W. H. Byrne, architect, Dublin.

Re-opening of Thornage Church, near Norwich.—On the 14th inst. this church was re-opened after restoration. The architect has been Mr. Lacey, diocesan surveyor, the builder Mr. Blyth, of Foulsham.

Chapel, St. Mary's School, Reading.—The foundation-stone of a new Chapel has just been laid at St. Mary's School. Mr. Charles E. Ponting, of Marlborough, is the architect.

Re-opening of Newbiggin Church, Northumberland.—For some time past the ancient church of St. Bartholomew, Newbiggin-by-the-Sea, has been in the hands of the restorers, and the work

has now been finished. The gallery has been removed, and the west end of the nave thrown open. The font has been placed in its old position at the middle of the west end. A vestry and organ chamber have been erected north of the chancel. The ancient walling has been stripped of its plaster and yellow wash. Choir seats have been supplied, and a dwarf screen erected beneath the chancel arch. The altar has been raised by two new stone steps, and behind it the reredos has been now completed. Mr. Simon Allen, of Newbiggin, was entrusted with the work, under the superintendence of Messrs. Hicks & Charlewood, architects, of Newcastle.

THE COMPLETION OF TRURO CATHEDRAL.—At a recent meeting of Truro Cathedral Building Committee, the financial report was read. It showed that after payment of the cost of the foundations, amounting to 1,983*l.*, there remains in hand available for the building of the nave nearly 27,500*l.* A letter was read from the architect announcing that the whole of the working drawings for the nave, exclusive of the towers, would be ready by the end of the present month. The Committee decided that Mr. Pearson should instruct a surveyor to take out quantities and prepare specifications. It is probable that a meeting will be held in January to invite tenders for the building. The Committee have requested Mr. Pearson to prepare sketches of the interior of the nave, east and west, as well as of the west front, indicating the proposed section that has been suggested should be the limits of the present undertaking.

CHURCH EXTENSION, WOOD GREEN.—The memorial-stone of an extension of St. James's Prebyterian Church, High-street, Wood Green, has just been laid. A new aisle and gallery are to be erected, providing further seating room for about 160 persons, at a cost of 2,000*l.* Mr. Arnold is the architect, and Mr. Say, of Wood Green, the builder.

PARISH CHURCH, CAINSCROSS, GLOUCESTERSHIRE.—The new chancel at Cainscross Parish Church has just been consecrated, together with other improvements consisting of new chapels, font, windows, and an enlargement of the organ. The architect was Mr. W. Plank, aud the building contract was secured by Mr. Cook, of Pakenhill.

BAPTIST CHAPEL, FORD, DEVONPORT. — The memorial stones of this building were laid on the 12th inst. The building will have a frontage on Alfred-road. The main front will have a gable, with a five-light tracery window, and will be flanked on either side with turrets. The seating accommodation on the ground floor will be for 480. When galleries are added there will be additional accommodation for 235 more. Inside, the chapel will be over 60 ft. long and 50 ft. wide. In front of the rostrum is placed the baptistry, which is to be lined with white-glazed bricks. Two vestries are provided, together with an organ chamber and choir seats. Heating is to be supplied by means of hot-water pipes. The roof is to be open timbered, and the pews will have modern pitch-pine ends. The plans were prepared by Messrs. Wiblin & De Boinville, of Plymouth, and the contractor is Mr. W. Partridge, also of Plymouth, whose contract was 2,552*l.* 5s.

FREE CHURCH HALL, SHAWLANDS, RENFREWSHIRE.—The memorial stone of the hall of Shawlands Free Church was laid on the 15th inst. The hall, which is estimated to cost 2,000*l.*, is situated at Shawlands Cross. It is intended to build a church on the ground between the hall and Pollokshaw's-road. The principal elevation of the hall faces a street now being formed. The side walls are divided into five bays, three of them being filled with one-light windows, the other two having two-light windows. The roofs are to be covered with Aberfoyle green slates, finished with red tiled ridging. The hall will provide for 500 sittings. It is being built from designs by Mr. John Hamilton, architect, the style being Gothic.

WESLEYAN CHAPEL, MEERSBROOK, SHEFFIELD.—On the 18th inst. the new Wesleyan school chapel, Meersbrook, in connexion with the Sheffield Brunswick Circuit, was opened. The school-chapel is 64 ft. by 29 ft., and with the two adjoining vestries provides accommodation for 350 people. Near the new chapel there is sufficient land upon which to build a large chapel in the future. The architects are Messrs. Helmsoll & Paterson, the builder Mr. A. Moore, the joiners, Messrs. Bolsover Bros., and the plasterers Messrs. Hodkin & Jones.

FREE CHURCH, CARNOCK, NEAR DUNFERMLINE.—The memorial stone of this church was laid recently. The church is being erected from plans prepared by Mr. Andrew Scobie, architect, Dunfermline. It will be a Gothic structure with accommodation for 300 sittings, besides a small hall at the back and other accommodation. The contractors for the work are :—William Templeman, mason, Cairneyhill ; David Graham, joiner, Dunfermline ; Muir & Gillan, plumbers, Dunfermline ; M'Gregor & M'Owan, slaters and plasterers, Dunfermline ; and Alex. Lowe, glazier, Dunfermline ; and the entire cost is not expected to exceed 1,100*l.*

UNITED PRESBYTERIAN CHURCH, HURLFORD, AYRSHIRE.—A new United Presbyterian Church at Hurlford was opened on the 15th inst. The church is Gothic in style, and is seated for about 400, while an adjoining hall has accommodation for 190. The cost is estimated at 2,700*l.* The architect was Mr. G. Andrew, Kilmarnock.

WESLEYAN DAY SCHOOLS, PAULTON, SOMERSET.—New Wesleyan Day Schools have been opened at Paulton. Messrs. Keeling & Sons, of Timsbury, have erected the building from plans prepared by Mr. W. F. Bird, of Midsomer Norton. The building is of one story, built of local stone with free-stone dressings, and has an open timbered roof. The fittings are of pitchpine, and accommodation is provided for 320 scholars. All the floors are of wood blocks. The building is heated throughout with hot water apparatus provided by Messrs. J. Crispin & Sons, of Bristol, but in the two infants' rooms open fireplaces are provided in addition.

TABERNACLE, HERNE HILL.—The foundation stone of the new tabernacle in course of erection in the Winterbrook-road, Herne Hill, has just been laid. The building is of red brick, capable of holding some 500 persons. The builders are Messrs. W. J. Mitchell & Sons, of Dulwich. The architect is Mr. Charles Barry, of Westminster ; and the clerk of the works is Mr. W. H. Thomas.

WHITFIELD'S CHURCH, TOTTENHAM COURT-ROAD.—On the 21st inst. Dr. Joseph Parker relaid the foundation-stone of the old tabernacle in Tottenham Court-road, which was laid by George Whitfield in 1756. The new buildings will comprise a church capable of seating 1,150 people, and a hall, to be called after Toplady, which will accommodate 800 persons. Mr. Roland Plumbe was the architect.

RAGGED SCHOOL, BLACKBURN.—On the 8th inst. the new Ragged School, Bent-street, Blackburn, was opened. The architects of the building, which has cost 3,000*l.*, were Messrs. Briggs & Wolstenholme.

CATHOLIC SCHOOLS, MARKET WEIGHTON.—The laying of the foundation-stone of the Roman Catholic schools at Market Weighton took place on the 18th inst. The schools, which are to accommodate about 100 children, are being built on a site on the south side of the town, at the junction of the Sanction and Cliffe roads. The main room is 60 ft. by 20 ft., with class-rooms and cloak-room. The architects are Messrs. Sinnott, Sinnott, & Powell, of Liverpool and Manchester. The contractor is Mr. Hudson, Market Weighton.

WORMIT SCHOOL, DUNDEE.—Additions are to be made to this school. These consist of three class-rooms, each seated for seventy-two pupils. The plans have been prepared by Mr. T. Martin Cappon, architect, Dundee.

PROPOSED TECHNICAL SCHOOL, LEEK.—An inquiry was held at the Leek Town Hall, recently, before Colonel A. J. Hepper, of the Local Government Board, with reference to the application of the Urban District Council for sanction to borrow 4,000*l.* for the provision of a technical school and public gymnasium, and 350*l.* for the purchase of land for town-hall purposes. Mr. Sugden, the architect, stated that the builder's contract was 4,613*l.*, and his (Mr. Sugden's) estimate 4,390*l.*, but that did not include glazed bricks, which would make a difference of 200*l.*

RHYL COUNTY SCHOOL.— At a meeting of the governors of the Rhyl County School on the 20th inst., the chairman produced plans prepared by Mr. Shayler, of Welshpool, of proposed new school premises. The plans showed accommodation for eighty boys and eighty-six girls. It was resolved to engage Mr. Shayler's services as architect.

SCHOOL-ROOMS, WREXHAM.—On the 21st inst., Lady Osborne Morgan laid one of the foundation-stones of a new school-room in connexion with the Bradley-road Baptist Mission Chapel, Wrexham. The school-room will cost 800*l.*, and the builders are Messrs. Davies Brothers, Wrexham, while the architect is Mr. John G. Owen, Liverpool.

PROPOSED NEW WORKHOUSE INFIRMARY FOR SKIPTON.—At a meeting of the Skipton Board of Guardians on the 15th inst., Mr. J. Hartley, architect, presented the plans of the proposed new workhouse infirmary, which is to contain forty-eight beds, the entire cost being estimated at 3,300*l.* The Guardians approved of the plans, which will be sent to the Local Government Board for approval.

PUBLIC CONVENIENCE, SOUTH SHIELDS.—A large underground convenience is to be constructed in the Market Place, South Shields. The sanitary and plumbing fittings will be carried out by Messrs. Shanks & Co.

COAL WHARF, BERMONDSEY.—The Seaborne Coal Wharf, Bermondsey, is to be rebuilt from the designs and under the superintendence of Mr. Henry Adams as engineer. Messrs. Holliday & Greenwood, of Brixton, are the contractors.

BUSINESS PREMISES, LYNN.—New premises have been erected in High-street, Lynn, for Messrs. Jermyn & Perry and Messrs. Jermyn & Sons. The architect was Mr. H. J. Green, of Norwich and Lynn, the builders being Messrs. Kerridge & Shaw, of Cambridge.

THE CITY ARCADES, BIRMINGHAM.—With regard to the first section of the new arcades between Union-street and New-street, Birmingham, the builders' contract has been let to Mr. E. J. Charles, of Moseley ; and the terra-cotta to Messrs. Doulton & Co., of Lambeth. The architects are Messrs. T. W. F. Newton & Cheatle, of Birmingham.

CLUBHOUSE, PLYMOUTH.—A new clubhouse has been erected for Plymouth Corinthian Yacht Club, below the Citadel, and immediately opposite the end of Batten Breakwater. Messrs. A. R. Lethbridge & Son were the builders, and the architect was Mr. E. Coath Adams.

IMPROVEMENTS ON THE COLMORE ESTATE, BIRMINGHAM.—Perhaps no portion of Birmingham is at the present time undergoing so rapid a transition as the Colmore estate, between Colmore-row and St. Paul's-square. Old properties are being pulled down, streets are being widened and diverted, and a large number of modern buildings are rapidly springing up and taking the place of so many old rookeries. One of the most important buildings of this series is a large block of offices in Newhall-street, and also having a frontage to Cornwall-street (originally Bread-street). In this case, advantage has been taken in the difference of the levels to obtain several entrances. The building has been planned with suites of rooms for doctors or dentists, having separate entrances, and at the back and on the upper floors are a large number of professional offices. In the aggregate the number of rooms is about ninety. The elevations are in small red bricks and buff terra-cotta, and the roof is of Stow-in-the-Wold stone slabs. In Edmund-street, a block of offices for Messrs. G. J. Eveson, Limited, built of red bricks and terra-cotta, has just been completed. Almost immediately opposite, new premises have just been started for Messrs. Edmund Worrall & Co., bookbinders. These premises contain shop, warehouses, and offices fronting the street, and will be carried out in Darley Dale stone, Leicester sand bricks, and Westmoreland slate roofs. Immediately adjoining will be two sets of doctors' chambers, with residential houses. They are so planned that they may be used, if necessary, as private hospitals. The elevations show four arches on the ground floor, in Portland stone, from which rise an equal number of ornamental bay windows, terminating in two high-pitched gables and a green slate roof. Perhaps a broader treatment than any of these obtains in the new buildings for Messrs. Buckler & Webb, Limited, at the corner of Church-street and Cornwall-street. The elevation to Church-street is divided into five large spaces, with semicircular arches, springing from wide and deeply-recessed piers. Above this is a boldly-modelled cornice and window in arcading for the top floor. This treatment is also in small red bricks and buff terra-cotta. The architects are Messrs. T. W. F. Newton & Cheatle.—*Birmingham Post.*

PUBLIC BATHS, BURSLEM, STAFFORDSHIRE.—Colonel Hepper, of the Local Government Board, recently held an inquiry at Burslem into an application of the Burslem Town Council for sanction to borrow 1,680*l.* for the purposes of public baths, 900*l.* for public works and pleasure grounds, 760*l.* for street improvements, and 616*l.* for works of sewage. The various loans were explained in detail by the Town Clerk and Mr. F. Bettaney (the Borough Surveyor).

PUBLIC BATHS, CHESTER.—On the 19th inst., at a meeting of the Chester Town Council, Alderman W. H. Churton moved the adoption of a recommendation by the Boating and Baths Committee that the plans of Messrs. Douglas & Minshull for the erection of public baths in Union-street, at an estimated cost of 11,000*l.*, be approved, and that the Committee be authorised to receive tenders and have baths erected. He explained that the plans provided for a swimming-bath 60 ft. long by 30 ft., a second swimming-bath 80 ft. long by 30 ft., with slipper baths, vapour baths, &c. In connexion with the scheme a new road will be made from Foregate-street to the site of the baths, near Grosvenor Park. The recommendation was agreed to.

NEW BANK AT SHAW, NEAR OLDHAM.—The new banking premises just opened in Shaw by the Oldham Joint Stock Banking Company, branch of the London and Midland Bank, Limited, are situated in Rochdale-road and Chapel-street. The whole of the work has been designed and superintended by Mr. Thomas Taylor, architect, Oldham.

NEW BOARD-ROOM FOR DUNDEE CHAMBER OF COMMERCE.—An addition to the accommodation at the Dundee Royal Exchange has been furnished in the construction of a board-room. To the new board-room, which is part of the building of the Pearl Life Assurance Company, entry is obtained by a doorway opening into the main staircase of the Exchange. The new room measures 25 ft. by 14 ft., with a lofty ceiling. The upper portions of the windows are filled in with stained glass, the woodwork being of oak. The offices of the Pearl Assurance Company are approaching completion. The architects for the work are Messrs. C. & L. Ower, Dundee, and the various tradesmen are :—Mason work, Messrs. D. & A. Powrie ; joiner, John F. Shaw ; slater, James Alexander ; plasterer, Reoch & Kilgour ; and plumbers, John Farquharson & Sons.

REOPENING OF THE COUNCIL CHAMBER, CHESTER TOWN HALL.—On the 12th inst. the opening took place of the council chamber and other portions of the northern building of the Town Hall, Chester, which were destroyed or affected by fire on the evening of March 27, last year. Messrs. Lockwood & Sons, architects, Chester, were entrusted with the plans for the restoration of the council chamber, &c., and advantage was taken of

the occasion to effect other alterations in the interior of the hall. A contract for the work was entered into by Mr. W. Freeman, builder, Chester, for 7,970*l.*, but additional work and alterations will entail about another 1,000*l.* expenditure. A roof-light has been placed in the police-court, the magistrates' room has been considerably enlarged, a more commodious law library has been provided on the left side of the police-court corridor, whilst the old library-room on the opposite side of the corridor has been converted into a muniment strong apartment. Special attention has been devoted to improved sanitation and lighting and to the provision of a new heating apparatus throughout the hall.

Parish Hall, Gateshead.—The new parish hall connected with the Ven. Bede Church, Sunderland-road, Gateshead, for Sunday school and other purposes, was opened on the 19th inst. The building is 76 ft. long, 36 ft. broad, and will seat 500. The cost is 1,500*l.* The architects are Messrs. Oliver & Leeson, of Newcastle; and the contractor Mr. G. H. Mauchlen.

Free Library, St. George's, Bristol.—St. George's Free Library was opened on the 19th inst. by the Bishop of Bristol. The building is Late Renaissance in style, and is constructed of red pressed bricks, with Ham Hill stone dressings and windows (filled with cathedral glass). The central door—of teak—opens into a large hall, at right angles to which are extensions forward, to be used as reading and news-rooms; and portions are also set apart for ladies, students, and juveniles. The interior has a vaulted ceiled roof; the walls are stuccoed, and the dado is of opalite. There is an arcading on the park side of the central hall, the arches being of Ham Hill stone, supported by columns of polished Aberdeen granite. From this opens a recess, in which the book-shelves are arranged. Inside the main entrance is a screen of wood and glass (with doors in front and on either side), dividing the building into several departments. Behind the recess, on the city side, are the librarian's room and other offices, and above the recess is an apartment for storage and general purposes. In the basement are a heating chamber and store-rooms. Mr. Frank Wills is the architect, and Messrs. W. Cowlin & Sons the builders. The cost of the structure has been between 6,000*l.* and 7,000*l.*

Parish Room, St. Helens.—On the 20th inst. Sir David Gamble, Bart., officiated at the opening of a new parish-room and caretaker's cottage adjoining St. Mark's Parish Church, St. Helens. The buildings, which have cost 1,600*l.*, are of red brick with stone dressings, and comprise an assembly room, 40 ft. by 30 ft., with wood-block floor, and a dado of glazed brick 4 ft. 6 in. high. The main entrance is from North-road, at the south-west corner of the assembly-room, another door being situated at the east end, to the right of the platform, and leading into the vestibule. The architect of the building was Mr. James Gandy, and the contractor Mr. Peter Tickle.

Sandeman Public Library, Perth.—The new Sandeman Public Library, Perth, was opened on Saturday last week by the Earl of Rosebery. The building occupies a central position in the city, and is Italian Renaissance in style, built of red free-stone, and having four polished granite pillars in the centre of the front elevation in Kinnoull-street. The site is an oblong one, with a north and an east frontage, extending from Mid-street on the north along Kinnoull-street—a new thoroughfare—half way to the High-street. The main door is in Kinnoull-street about the centre of the building, and on its entablature is a carved shield with the city arms in relief, and immediately over this, in front of the fan-light, is a wrought-iron grille with the Sandeman arms in bronze. The door opens into a vestibule, the walls of which are treated with a facing of marble, while the floor and steps are of white Sicilian marble. From the entrance hall access is gained to the lending department on the left at the south end of the building, the librarian's room opposite the entrance, the main staircase, and the general reading and juvenile rooms to the right. The ground-floor, on which the foregoing apartments are situated, is 4 ft. above the street level. The entrance hall, and the space for the public in the lending room, are floored with cream mosaic. The other floors are laid with red pine in narrow boards. The lending library is 53 ft. by 35 ft., giving accommodation for about 25,000 volumes. The space for the public, with the service counters and indicators, is in the centre of the room, on the north side; and the book-shelves, of Kauri pine, are arranged round the walls. The general reading and juvenile rooms are the next section of importance on the ground floor. The former, which is 57 ft. long by 35 ft. wide, has light on three sides. The juvenile room, 21 ft. by 20 ft., is between the reading-room and the entrance-hall, and is accessible from both. Ascending a spacious staircase, the first floor is reached, on which is placed the reference department, book store, ladies' room, committee-room, &c., and there is a private door to the librarian's house on the same level. The reference-room, 37 ft. by 35 ft., to the north of the building, is lighted from the roof on all sides. The ceiling is coved and panelled in plaster-work. The lower walls are panelled in yellow pine, and the upper walls are divided by panelled pilasters, with enriched capitals, carrying the main beams of the roof. Adjoining the reference-room on the west is the ladies'-room, 30 ft. by 18 ft., with a private lavatory, &c. These two rooms give accommodation for eighty-eight readers. To the right of the staircase is the committee-room, which is 22 ft. by 17 ft. A private door leads to the librarian's house, but the main entrance is from a staircase at the south end of the building. On an upper floor, over the south section of the building, is the picture gallery and museum, 53 ft. by 35 ft. The room is roof lighted, and the ceiling is coved and panelled similar to the reference library, and has an average height of about 20 ft. The gallery is approached from the main stair of the library, and has an emergency exit to the south staircase, which leads direct to the street. The basement floor is 4 ft. below the street level, and contains receiving-room, workshop, rooms for male and female attendants, newspaper store, heating chamber, &c., and also a public lavatory. The lavatory, &c., is finished with cream and buff-coloured glazed tiles, and the floor is laid with red and black Ruabon tiles. The whole building has been constructed with concrete floors and steel roof couples; and fire hydrants are placed on each landing. The heating is by means of low-pressure hot-water pipes and radiators. The vitiated air is extracted at the four corners of the principal rooms on the ground floor by fireclay flues built in the walls, leading to shafts on the roof, on which are placed exhaust ventilators. The upper rooms are ventilated at the centre of the coved ceiling. At the north-east corner is a turret, with stair leading from basement and other floors to the roof. Above the roof the stair terminates in a stone-roofed clock tower. The following were the contractors:—Builders, Messrs. Fraser & Morton, Perth; carpenter and joiner, Mr. T. D. Falconer, Perth; plumber, gas-fittings, and heating, Messrs. W. Frew & Sons, Perth; slater, Mr. James Buchan, Perth; plasterer, Mr. A. M'Ritchie, Dundee; steel beams, Messrs. Bladen & Co., Glasgow; glaziers and painters, Messrs. Stalker & Boyd, Perth; tile work and mosaic floors, Messrs. Galbraith & Winton, Glasgow; electric wiring, Messrs. Westwood & Sons, Perth; smithwork, Mr. D. M'Gregor, Perth; iron-mongery and grates, Messrs. Garvie & Syme, Perth; and stone carving and marble work of vestibule, Mr. J. L. Thomson. The Sandeman memorial tablet and the wrought-iron railing for the stair were supplied by Messrs. Jones & Willis, Birmingham. The total cost of the building, including furnishing, has been about 14,000*l.* Mr. P. Campbell, Perth, was the measurer; and the architects were Messrs. Campbell Douglas & Morrison, Glasgow; Mr. Henderson was clerk of works.

Public Halls, Neilston, Renfrew.—The new halls, which are now being erected, are situated in the main street of the village, and are designed in the Scottish Renaissance style. On the ground floor, at one side is an egress door from the main hall and a two-light window lighting one of the rooms, and on the other side a three-light window. On the upper floor, above a moulded sill course, are two broad four-light and one three-light windows lighting the lesser hall, the central window carried higher into the pediment. On the roof-ridge is a circular ornamental ventilating turret, with flat-domed copper roof. The front is being built of fine red stone from Gatelawbridge quarry, and the roofs are covered with light sea-green slates, finished with red ridge tiles. Entering by the central door, there are on either side of vestibule committee and ladies' rooms, and in an inner vestibule are the two doors to the large hall, and a staircase leading to the gallery and lesser hall. The main hall has coved and panelled ceiling, and half-open timber roof. At one end is a small gallery, carried on a steel girder, and an open platform at the other end. The hall is seated for about 430 persons, with 72 in the end gallery. At the platform end are retiring-rooms for lady and gentlemen artistes, and an additional exit door. The lesser hall occupies the upper floor of the front block, and accommodates 200 persons, and has also a separate retiring-room. The architect is Mr. John B. Wilson, Glasgow, and the buildings are being erected under his superintendence by the following contractors: Mason, Mr. Hugh Houston; wrights, Messrs. Bell & Duguid; slater, Mr. Wm. Patrick; plasterer, Mr. Wm. Graydon; plumbers, Lochrie & Neilson—all of Barrhead; and glaziers, Messrs. Meikle & Sons, Glasgow.

Sanatorium, Huddersfield.—The sanatorium for the accommodation of patients suffering from infectious diseases, erected by the Huddersfield Corporation at Mill Hill, Dalton, was opened on the 22nd inst. The building has been erected in accordance with the plans of Messrs. E. Thomas & Sons, London, whose designs were selected in competition. Situated about two miles from the centre of Huddersfield, the sanatorium stands very near the border, but within the borough. The administrative block, which has a frontage to the north-west, is in the Elizabethan style. From the entrance access is gained to a central hall, on each side of which is a corridor, one leading to the rooms of the staff. On the first floor are nineteen bedrooms for the nurses. The second floor provides nineteen similar rooms for the servants. The rooms are divided by corridors, at the end of which are the lavatories and baths. From the administrative block a covered way leads to the three pavilions for the patients. One pavilion is for acute cases of scarlet fever. Thirty beds are provided in five wards in this block. A second pavilion, built on the same plan, is for scarlet fever convalescent patients, and the third pavilion, having similar arrangements, is for typhoid patients. The floors are laid with teak. At the rear of the third pavilion are the laundry and mortuary. The buildings will be heated by hot water and fireplaces, and will be lighted by electricity, but gas is also laid on. The principal works have been carried out by the following firms:—Masons' work, Messrs. A. Graham & Sons, Huddersfield, and Mr. A. Schofield, Dalton; joiners' work, Mr. W. H. Pick, Bradford; smiths' work, Messrs. J. Bagshaw & Sons, Batley; slaters' work, Messrs. T. Longbottom & Sons; plasterers' work, Mr. W. E. Jowett; plumbers' work, Mr. J. Marsden; gasfittings, Messrs. J. H. Taylor & Co.; glaziers' work, Messrs. Crossley & Bould; painters' work, Mr. A. Jackson; engineers' work, Messrs. Calvert & Co.

Theatre, Salford.—On the 22nd inst., Mr. George R. Sims laid the corner stone of the new frontage of the Regent Theatre and Assembly Rooms, Salford. The improvements are to be carried out at a cost of 12,000*l.* The theatre was built four years ago, and the premises are now to be completed by the erection of an ornamental front and an assembly-room. Mr. Frank Matcham is the architect, and Mr. W. Brown is the builder.

Parochial Hall, Anfield, Lancashire.—The foundation-stone was laid on the 20th inst. of a new parochial hall and Sunday school in connexion with St. Simon and St. Jude's Church, Anfield. The erection, which is situated at the rear of the church, will consist of a school-room 83 ft. by 30 ft., a parish room 30 ft. by 20 ft., and two class-rooms. The whole of the exterior is to be carried out in grey brick with buff brick and red sandstone dressings, in keeping with the church building. The cost of the erection will be 1,630*l.*, the work being carried out from the designs and under the superintendence of Messrs. R. Owens & Son, architects, Liverpool; while the contractors are Messrs. J. & G. Chappell, Walton.

City Hall, Belfast.—The foundation-stone of this building, an illustration and a brief description of which appeared in our issue for June 12, 1897, was laid on the 18th inst. The buildings are in quadrangular form, the external dimensions being 300 ft. in length and 250 ft. in depth, the internal quadrangle being 180 ft. by 130 ft. A large portion of the site remains outside the City Hall. In the internal arrangements accommodation has been provided for the city officials and the following departments:—Town Clerk, City Surveyor, Health Department, Accountant, City Cashier, Gas Department, Electric Light Department, Rate Offices, School Attendance Department, Market Department, Weights and Measures Department, &c. The reception-rooms embrace, first, an apartment, measuring 50 ft. by 30 ft., which will be specially set apart for receptions; next, the council-chamber, the dimensions of which are 70 ft. by 38 ft., together with the following:—Ante-room, robing-room, writing-room, banquet-hall (70 ft. by 38 ft.), and three apartments for the Lord Mayor exclusively—viz., his reception-room, parlour, and retiring-room. The building is being erected by Messrs. H. & J. Martin, Limited, Belfast. Messrs. Thomas & Son, of London, are the architects.

Palace Theatre, Aberdeen.—The new Palace Theatre, Bridge-place, Aberdeen (which will take the place of the People's Palace, destroyed by fire), was opened on Monday. There is accommodation for 3,000, and the total cost has been about 15,000*l.* It is a granite building, and is fireproof throughout. The architect is Mr. John Rust. The following were the contractors:—Mason, George Hall; carpenter, George Jamieson; plumber, John Campbell; plasterer, George Gibb; slaters, McGregor & Shand; painters and glaziers, G. Donald & Sons; ironwork, Jas. Abernethy & Co.; heating, Shirras, Laing & Co.; electric lighting, P. C. Middleton & Co.; all of Aberdeen; upholstering, furnishing, and decorative work, A. R. Dean & Co., Birmingham; stage scenery, Kelly, Wilkins, & Co., Liverpool. The clerks of works were—first, Mr. Alex. Cruickshank, and subsequently Mr. John McWilliam.

New Buildings, Burton-on-Trent.—The Burton-on-Trent Co-operative Society, Limited, are about to build a range of stables, caretaker's house, and boundary walls at Shobnall-street on land recently purchased by them from the L.N.W.R. Company. Mr. W. A. Stevenson, has secured the contract for 2,355*l.*, and Mr. R. Stevenson, Burton-on-Trent, is the architect. Plans are also in course of preparation for a range of shops, offices, store-rooms, and concert hall, to be erected in Byrkley-street.

St. Cuthbert's Parish Hall, Durham.—On the 25th inst. the foundation-stone of St. Cuthbert's new Parish Hall, Durham, was laid by Mrs. Darwin, of Dryburn. The site is at Framwellgate Head, at the junction of Framwellgate and Sidegate. The hall will be used in the dual capacity of mission hall and Sunday schools, also for social gatherings. It will be 25 ft. broad and 52 ft. long. The architects are Messrs. Plummer & Burrell, of Newcastle and Durham; and the contractor is Mr. C. W.

Gibson, of Durham. The entire cost will be about 700*l.*

PROPOSED NEW LAW COURTS, LEEDS.—We are glad to hear that the Leeds Corporation are turning attention to the need for new and more commodious Law Courts, and that it is probable they will face towards Victoria-square and take the place of the mean buildings which now face the front of the Town Hall. Some such improvement is what we have several times recommended.

THE ROYAL EAR HOSPITAL, SOHO.—We are informed that the Building Committee have approved Mr. A. O. Collard's plans and designs for new buildings to be erected, at an estimated cost of 9,000*l.*, on a site in Dean-street, recently bought for 4,200*l.* This hospital, the oldest of its kind in Europe, was founded, under Royal patronage, as the "Royal Dispensary for Diseases of the Ear," in 1816, in Dean-street, whence, in 1876, it migrated to a house, its present quarters, in Frith-street, where, seven years later, an in-patients' department with a children's ward, were opened. In view of increasing requirements and the scanty accommodation afforded by the existing house, an effort is being made to provide more suitable premises, towards which subscriptions are much needed.

ST. CUTHBERT'S CHURCH, GLASGOW. — This church, which is situated at the corner of Hinshaw-street and Doncaster-street, near New City-road, has been opened. The entrance is in Doncaster-street. The gable of the church has three lancet lights, divided by splayed buttresses, and a wheel window in the apex of the gable, the gable being flanked by buttresses, terminated with moulded gablets. There is a spacious entrance hall and staircase, the floor being laid with Corsehill pavement. The entrance to hall and vestry is to the east of the church. The elevation to Hinshaw-street is divided into four bays. The total accommodation in area and gallery is 840. The pulpit and choir are approached by stone steps, and the floor is laid with encaustic tile. The hall is parallel with the church, and is lighted from the roof, and has accommodation for 300. The church and hall are heated by hot-water pipes, low-pressure system. The masonry is of Montgrennan stone, the roofs being covered with red Staffordshire tiles. The total cost, including price of site and cost of extra foundations, is 8,000*l.* The tradesmen were: mason and wright work, Messrs. W. Shaw & Son; A. & D. Mackay, for slater work; Mitchell & Davis, for plaster work; Colin Turner, for plumber work; C. & J. Malloch, for glass work; and J. Singer & Son, Frome, Somersetshire, for gas-fittings. Mr. W. F. M'Gibbon was the architect.

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, HARROGATE.—Alderman Fortune (Chairman of the Water Committee) on the 17th inst. cut the first sod in connexion with the Scargill reservoir. The engineer is Mr. Dixon.

THE WALLASEY WATER SCHEME.—A special meeting of the Wallasey Urban District Council in committee was held on the 17th inst. at the public offices, Egremont, to consider the proposed new water scheme for the district, by which it is suggested to secure a supply of water from Flintshire. Mr. Deacon, the engineer appointed to prepare plans, stated that the cost was more likely to be over than under the estimated sum of 465,000*l.* The majority of members present were of opinion that sufficient time had not been taken to consider the subject, and the matter was referred back to the committee for further consideration.

POLLUTION OF THE MERSEY.—At the meeting of the Manchester Rivers Committee on the 17th inst., the question was raised of the proposed attempt on the part of the Liverpool Corporation to prevent the Manchester Corporation from discharging the contents of the sludge steamer at the entrance to the Mersey. The Rivers Committee of the Corporation expressed considerable surprise at the proposed procedure, especially in view of the fact that they only deposit sludge far out at sea, beyond a point where it can affect the city of Liverpool, whereas the Liverpool Corporation not only pour their crude sewage into the Mersey close to the Landing-stage, but also discharge all the solid refuse of the city at the same point at which the sludge is deposited from the Manchester steamer. The Chairman and Deputy-Chairman were instructed by the committee to safeguard the interests of Manchester in this matter, and if necessary to take joint action with the Ship Canal authorities. A letter was read from the Local Government Board granting authority for the borrowing of 110,570*l.* for the purpose of sewage and sewage disposal. This is a part of 170,000*l.* spent by the old Rivers Committee, and for which borrowing powers had not previously been obtained.

STREET IMPROVEMENTS, BLACKPOOL.—A Local Government Board inquiry was held at the Blackpool Town Hall recently by Colonel W. Langton Coke, M.Inst.C.E. The application made by the Corporation was for sanction to borrow 3,641*l.* for works of private street improvements and 1,063*l.* for market purposes. The Borough Surveyor, Mr. J. Wolstenholme, explained the necessary works.

LEEDS AND ITS SEWAGE SYSTEM.—A report was presented to the Streets and Sewerage Committee at its meeting on the 19th nst. with reference to the result of the experiment with the Dibdin system at Knostrop, which was recently adopted by the Council. The treatment of the sewage had, it was stated, given every indication of the possible solution of the difficulty of dealing with so large an accumulation of sewage per day.

CAERPHILLY SEWERAGE SCHEME.—The Local Government Board have sanctioned the scheme promoted by the Caerphilly Urban Council for draining Caerphilly, Llanbradach, Aber, and Senghenydd, and sewage disposal, in respect of which it was proposed to borrow 36,000*l.* The district proposed to be drained by this scheme is about 17,000 acres. The scheme is in two sections, viz., Rhymney Valley and the Aber Valley. The engineer is Mr Harpur.

SEWAGE WORKS, HORNSEY.—On the 20th inst. Mr. Robert H. Bicknell, one of the Local Government Board Inspectors, held an inquiry into an application from the Hornsey District Council to borrow 1,876*l.* for works of sewage and surface-water drainage, 1,464*l.* for street improvements, and 580*l.* for works of paving. Mr. Lovegrove, the Surveyor, explained the nature of the proposed works.

"GENESIS OF STREET MUD."—At the close of the meeting of the Public Works Committee of the Cardiff Corporation on the 20th inst., Mr. Harpur, the Borough Engineer, asked permission to call the attention of the committee to the articles which had recently appeared in a contemporary under the heading, "The Genesis of Street Mud," and particularly to point out discrepancies in reports purporting to come from Professor Elliott. The Mayor said that nothing that had been said had in the slightest degree shaken the confidence of the members in the advice given to the Corporation by the Borough Engineer.

ABERDEEN WATER SUPPLY.—The Water Committee of Aberdeen Town Council have requested Mr. G. Gordon Jenkins, of Messrs. Jenkins & Marr, C.E. and architects, Aberdeen, to assist Mr. W. Dyack, Borough Surveyor, in making a survey and reporting on the cost of obtaining a water supply for the city from the River Avon at Inchrory, and as to the route.

ABERDEEN SEWERAGE SCHEME.—The report by Mr. Mansergh, engineer, London, who was consulted on this subject, has been presented. It deals with the complete sewerage system of the city—the whole scheme to cost 187,105*l.*, and the works to be begun at once, 112,495*l.* The expense of the scheme proposed by Mr. W. Dyack, Borough Surveyor, was 164,490*l.* The Town Council's Sewerage Committee, having considered the subject, resolved to apply to Parliament for the necessary powers to carry out the following works:—High-level sewers, 11,000*l.*; Girdleness outfall, 47,750*l.*; low-level sewers, 7,670*l.*; Ferryhill storm-water culvert, 8,200*l.*; Tile Burn storm-water culvert, 5,500*l.*; other storm-water overflows, 1,025*l.*; connecting sewers at Hutcheon-street, Millburn-street, and Torry, 8,100*l.*; Don Valley outfall, 10,500*l.*—total, 99,745*l.* This motion was carried by six votes to two against an amendment to carry out Mr. Mansergh's scheme in full.

FOREIGN.

FRANCE.—In spite of the unfavourable report of the Commission de Voirie, the Municipal Council of Paris voted last Saturday for the purchase of the land necessary to keep an open space before the Cluny Museum and the new Sorbonne. The price was 1,200,000 fr., of which half will be paid by the State; and the Municipality will undertake the formation of a new square on the site.——Considerable interest has been excited by the exhibition, at the Georges Petit Gallery, of the works of an American painter, Mr. George Innes.——A new infirmary for the aged is shortly to be built at Dieppe.——At the Académie des Beaux-Arts the question of the successor to M. Lenepveu is already being considered; the names most spoken of are those of MM. Harpignies, Roybet, Henri Martin, Rochegrosse, and Carrière. —— A fine marble bust of Alexandre Dumas, by M. Moncel, has just been placed in the vestibule of the library of the Institute.—— The jury of the Ecole des Beaux-Arts commissioned to adjudicate on the competition in the First Class of Architecture has awarded a Première Medaille to M. Auguste Perret, pupil of MM. Guadet and Raulin. The subject was "A Country House."——The "Société Industrielle "of Orleans has opened a competition for the construction of artisans' dwellings in that city.——The death is announced, at the age of 101, of M. Frédéric Moreau, who had acquired an archæological reputation for the excavations which he had carried on in the Department of l'Aisne, as well as by a collection which was well known both to French and foreign antiquaries. ——The death is also announced, at the age of sixty-eight, of M. Alphonse Goutès, former city architect of Montpellier. He was a pupil of Questel, and was Professor at the Arts School at Montpellier, and Member of the Société Centrale des Architectes.

BURNS STATUE, LEITH.—The Burns statue for Leith has been erected at the junction of Bernard-street and Constitution-street. The artist was Mr. D W. Stevenson R.S A Edinbut h

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. —In consequence of their present offices at 17, Great George-street being required by the Government, Messrs. Howe & Eversfield (auctioneers) have temporarily removed to No. 19, Great George-street.

GLASGOW BUILDING REGULATIONS.—The Corporation Building Regulations Committee met on the 19th inst., and received reports from the various departments on the question of improved by-laws for building regulation in Glasgow. It was agreed to make a synopsis of these reports, and hold another meeting to consider whether it will be possible in a Bill this Session to deal with all the points raised.

ST. MICHAEL, BASSISHAW, CHURCH.—In pursuance of a scheme made under the provisions of the Union of Benefices Acts, the living of St. Michael, in Basinghall-street, has been united to that of St. Lawrence Jewry. The church of the latter parish has served, since its re-building by Wren, for the united parishes of St. Lawrence Jewry and St. Mary Magdalen, Milk-street; we understand that under the scheme the demolition of St. Michael's church will soon be proceeded with. It was erected (1676-9) by Wren, at a cost of 2,823*l.*, on the site of the church re-built *circa* 1450, by John Burton and his wife Agnes, to replace the original one whereof the patronage in the twelfth century belonged to the prior and canons of St. Bartholomew, West Smithfield. In 1246 Henry III. gave the advowson to Adam Basing, son of Salomon Basing (Lord Mayor in 1216-17), a member of the family after whom the ward and the street are commonly considered to take their name.* The church is plainly designed; the main body, measuring 70 ft. by 50 ft., is of brick; the tower is that of the former structure. The tower—latterly faced with cement—has stone window dressings and angle piers; it has four stories, the top stage has a cornice, and a blocked parapet with pine-apples at the angles; from within the parapet rises a leaden lantern, octagonal on plan, having buttresses in the upper stage, which carries a concaved spirelet and vane. Corinthian columns divide the interior into three aisles, the camerated ceiling, shaped into panels, has side openings for light. The labours of Dr. Thomas Wharton during the Great Plague were commemorated by a finely sculptured tablet, erected after his death in 1673; in the church were buried John and Agnes Burton, and the following Lord Mayors—Sir James Yarford (elected 1519), in a chapel he built for himself on the choir's north side; Sir Richard Gresham (1537), and Sir John Gresham (1547), sons of John Gresham, of Holt, co. Norfolk; Sir Wolstane Dixie (1585), son of Thomas Dixie, of Catworth, Hunts; and Sir Leonard Halliday (1605).

ACCIDENT AT THE KENNINGTON THEATRE.—On the 24th inst. an accident happened at the new Kennington theatre which is in course of erection at Kennington-park-road. During the day two joists, measuring 12 ft. by 6 ft., had been placed in position in the stage work, but had not been fixed. Shortly before six o'clock some men employed by Messrs. Cawdrey & Co. were engaged in carrying timber over the joists, when one of the beams snapped in the middle, causing them to fall a considerable distance to the floor below. A carpenter named M'Phee had his skull fractured, the other men escaping with slight injuries. M'Phee was conveyed to St. Thomas's Hospital, where he was detained, little hope being entertained of his recovery.

QUEEN'S STATUE FOR DUNDEE.—The red granite pedestal for the bronze statue of the Queen for Dundee, has been prepared by Messrs. Bower & Florence, Aberdeen, under the superintendence of Mr. Hadden A. Bower, architect. The sculptor is Mr. Harry Bates, and the total cost of statue and pedestal will be about 2,500*l.* The figure is in a sitting posture, the left hand supporting the orb, and in the right there will be a spray of laurel.

PUBLIC IMPROVEMENTS, EGREMONT. — Mr. W. O. E. Meade-King, M.Inst.C.E., held an inquiry on the 14th inst at the Public Offices, Egremont, regarding an application by the Wallasey Urban District Council for permission to borrow (1) 40,000*l.* for gas purposes, (2) 1,790*l.* for street improvements, and (3) 1,198*l.* for fire brigade purposes. There was no opposition, evidence in support of the applications being given by the following officials:—Messrs. J. J. Burnley (accountant), J. H. Crowther (gas engineer), and W. H. Travers (surveyor).

A NEW LINING MATERIAL.—The "North European Compo-Board Company" (Denmark) send us a description and specimen of their new material, "Compo-Board," for lining walls, ceilings and floors. It is made up in boards $\frac{3}{8}$ in. thick, consisting of five layers viz.: two of damp-proof closely pressed paper board, one of a core of wood in sections, the grain running in different directions, the two other layers of a fireproof cementing material between the wood and the two paper layers. From the specimen sent to us, it certainly appears to be a very solid and strong material, and likely to be an efficient protector against cold and damp, though

* Some hold that "Bassishaw" relates to the Bassetts; the Basings are cited amongst the "Lombards" in the Hundred Rolls of 2 Edward I.; their town house stood in Basinghall-street.

we hardly fancy that it can be, as stated, "cheaper than plaster." Nothing is said as to the method of fixing it to the wall.

A Brick Carrier.—Messrs. Henry Fearncombe & Co. (Wolverhampton) send us an illustration of a useful and safe form of brick carrier, consisting of two iron frames at right angles with each other, one of them opening to admit eight bricks, and fastening with a hasp; a staple is fixed on the top to take a hook and chain for carrying the whole. It is simple and strong, and seems perfectly safe. It is called the "Phœnix Brick Carrier."

Braided Cotton Sash Line.—We have received a sample and description of the "Samson" solid braided cotton sash line (no maker's name attached). It is made with the strands doubling on each other and running through close to the centre, and claims to have greater resistance to wear than twisted, cable laid, or hollow braided line. We have had no opportunity of testing it in working, but it looks a very strong and compact cord.

Explosion in Wellington-street, Strand.—An explosion occurred in Wellington-street, Strand, on Wednesday, near the Bow-street end. It was found that an electric light box, which lies flush with the pavement, had been blown out, and the roadway for a distance of several feet ripped up. The iron cover of the box was hurled a considerable distance in the air.

Sepulchral Slab, Rand.—The Rev. J. D. Spain writes to us that the slab illustrated in our last issue was drawn by his son, Mr. J. E. Spain, whom we described as "Rector" in brackets. The letter we received with the drawing was apparently written by the Rector, and did not state clearly who the drawing was by.

CAPITAL AND LABOUR.

Briskness in the Building Trades.—The carpentry and joinery trades, both in the "house" and "ship" departments, are at present in a very flourishing condition. This satisfactory state of things is due to the exceptional activity in the general building industry and also in the shipyards. As illustrating the briskness just now prevailing, it may be mentioned that the Amalgamated Society of Carpenters and Joiners has only 371 out-of-work members out of a total of 55,690, representing a proportion of only two-thirds per cent., whilst it may also be noted that the Colonies and foreign countries are responsible for one-third of the number on benefit. In the Manchester district there are less than one-half per cent. on donation. Trade in all the leading centres is reported as satisfactory. It may be added that the Society contributed 2,290*l.* to the miners and others in South Wales during the recent dispute.—*Liverpool Mercury.*

Barry Masons' Lock-out.—A specially-summoned meeting of the members of the Barry branch of the Operative Stone Masons' Society was held on the 19th inst. for the purpose of considering the proposals of the Barry Master Builders' Association to terminate the lock-out now existing in the district. The Conciliation Committee had met on the 15th inst., when the masters offered to withdraw the lock-out notices provided the men agreed to return to work, and that they would raise no objection to the non-Society men who were at present engaged. These proposals were considered on the 19th, but the masons unanimously refused to accede to the requirements of the masters.

LEGAL.

INJURY TO BUILDINGS THROUGH EXCAVATIONS:

APPLICATION BY THE CONTRACTORS.

The case of Jordeson *v.* the Sutton, Southcoates, and Drypool Gas Company and Holme & King came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Chitty and Vaughan Williams, on the 24th inst., on the application of the defendants, Messrs. Holme & King, the contractors, to abide the result of an appeal brought by the other defendants, the gas company, from a decision of Mr. Justice North in the Chancery Division on August 4 last; reported in the *Builder* of February 19 and August 13. It may be remembered that the plaintiff brought his action for an injunction against the gas company and for damages against all the defendants in respect of injury caused to his cottages and land at Hull in consequence of subsidence caused by the withdrawal of water and sand in suspension from a running silt bed when the defendants began to excavate for the purpose of constructing a sunk gasholder tank, the plaintiff alleging that the contractors had been guilty of negligence in not adopting the best known methods of damming back the water and silt during the operation of constructing the tank. The plaintiff also complained that the gasholder, when erected and inflated to the proposed height of over 100 ft., would interfere with the access of light to his cottages, and on this issue Mr. Justice North found for the plaintiff, and granted an injunction restraining the gas company from raising the gasholder on its north side to a height of more than 68 ft. from the ground. He further awarded the plaintiff 340*l.* damages as against all the defendants for the injury which had been done.

Mr. Bardswell now said he appeared for Messrs. Holme & King, and his application was that the appeal which had been entered should be adjudged as brought by the defendant gas company, and that his client's appeal should be allowed to stand postponed until their lordships gave judgment in that appeal. The appeal of the gas company covered the appeal of Messrs. Holme & King, so that if the gas company won on their appeal his clients would win, and if the gas company lost they would lose. Therefore, to save time and expense, his clients were desirous not to go on with their appeal until the other appeal was heard. He (counsel) consented to abide by their lordships' judgment in the first appeal, and not to offer one single argument.

Mr. B. Pollock, on behalf of the respondents, said he did not object if there was an understanding that there should not be two hearings.

Upon this undertaking of Messrs. Holme & King their lordships allowed the application.

CASES UNDER THE LONDON BUILDING ACT.

On the 25th inst. Mr. N. W. Hedges, of Orpingley-road, Seven Sisters-road, was summoned by Mr. J. Goodchild, the District Surveyor of East Islington, for erecting a roof at his steam joinery works entirely composed of combustible material and without giving notice as required by the London Building Act. He had on a former occasion erected a similar roof and taken it down on notice being served on him, and now contended that it was only a timber stage. Mr. Horace Smith considered it very dangerous and imposed the full penalty of 40s. and 23s. costs.

On the same day Mr. W. Fuller, builder, of Avenell-road, Highbury, was summoned by the same Surveyor for rebuilding a bay without giving notice as required by the same act. The defendant had denied having done any work at the house in question until compelled to admit it, and Mr. Horace Smith imposed the full penalty of 40s. and 12s. 6d. costs.

Mr. Goodchild stated that he had only on a very few occasions asked for a penalty, but it was necessary to warn builders that even small works require notice, as sometimes when done without supervision they had to be redone in a year or two, and the magistrate remarked "Yes, and at *great expense.*"

MEETINGS.

Friday, October 28.

The Architectural Association.—Mr. J. E. Newberry on "Excavations at Thebes." Illustrated by Lantern Views. 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. F. J. Sykes on "Objects and Methods of Inspection, Nuisances, &c." 8 p.m.

Saturday, October 29.

Sanitary Institute (Demonstrations for Sanitary Inspectors).—Inspection at Express Dairy Company's Farm, College Farm, Finchley. 3 p.m.

London and Provincial Builders' Foremen's Association (Memorial Hall, E.C.).—Monthly Meeting. 7.30 p.m.

Monday, October 31.

Sanitary Institute (Lectures for Sanitary Officers).—Professor W. H. Corfield on "Water Supply, Drinking Water, Pollution of Water." 8 p.m.

Tuesday, November 1.

Institution of Civil Engineers.—Address by Mr. W. H. Preece, C.B., F.R.S., the President, and Presentation of Medals and Prizes awarded by the Council. Reception by the President in the Library after the meeting. 8 p.m.

Northampton Institute, Clerkenwell.—Mr. F. Bond on "The Geometrical Period." 8 p.m.

Wednesday, November 2.

Royal Archæological Institute of Great Britain and Ireland.—(1) "Amber from various Places," by Professor T. McKenny Hughes, M.A., F.R.S., F.S.A.; (2) Paper by Mr. Edward Peacock, F.S.A. 4 p.m.

British Archæological Association.—The Rev. Cæsar Caine on "Our Cities Sketched 500 Years Ago." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection at Disinfecting Station, Chelsea, 3 p.m.; (2) Lecture by Dr. A. Hill. 8 p.m.

Edinburgh Architectural Society.—Mr. J. A. Williamson on "Municipal Buildings." 8 p.m.

Liverpool Engineering Society.—Address by the President-elect, Mr. J. A. Brodie. 8 p.m.

Thursday, November 3.

Carpenters' Hall, London Wall (Free Lectures on Building and Sanitary Construction.)—Professor Banister Fletcher on "Sanitary Construction, Warming, and Ventilation."—II. 7.30 p.m.

Friday, November 4.

Architectural Association Discussion Section.—Messrs. F. M. Elgood, A. R. Jemmett, and H. V. Lanchester, on "Modern Architectural Tendencies, as Illustrated by Contemporary Work." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. H. R. Kenwood on "Infectious Diseases and Methods of Disinfection." 8 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).—Mr. W. Vicars on "Decorative Stone Work." 8 p.m.

Saturday, November 5.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Southwark and Vauxhall Water Works, Hampton.

British Institute of Certified Carpenters.—Visit to the "Carlton Hotel." 3 p.m. Meeting at Carpenters' Hall, 6 p.m.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until December 5.

[1897] 19,637.—Screwdrivers: *M. Wyatt.*—For the handle is substituted a loop to admit of a firm grip on a plain cross-handle; to the bar or shank is affixed a moveable sleeve with flange for a hand-grasp, and, instead of the usual termination in a single sharpened edge, is affixed an appliance for holding bits and similar tools.

22,101.—Levelling Staves: *J. E. Bach.*—Within the frame of the staff is a graduated tape tightly distended between two pulleys at the top and bottom of the staff, and exposed to view on the staff's front; the tape can be moved throughout its entire length by teeth in the lower pulley which fit into punctures in the tape or in a chain attached thereto; in operation, the staff is held on a place whose altitude is known or assumed, the surveyor directs his levelling instrument upon it and signals to his assistant to raise or lower the tape until the altitude is read on the scale when he signals the assistant to clamp the tape.

22,784.—Window Sashes or Frames: *J. Matthew & J. T. Buckley.*—To dispense with cords, weights, or counterbalances of every kind are contrived two frames or sashes in a casing which has one groove or race arranged so that the sashes when in position may slide or run in line, and having an opening at its two upright and opposite sides to communicate with the cavity in the wall; in line with the bottom of the two sashes is provided, on each side of the casing, a trough, extending into the wall-cavity, for receiving the sashes which have runners or pullies; the troughs are intended to collect water or moisture from without.

24,757.—Convertible Open and Close Fire-ranges: *C. Mills.*—A hood or canopy for covering and uncovering the opening through which the fire gases pass is adapted to be opened and closed by the action upon the hood of a bent lever arm operated by the movement of the fire-cover.

24,969.—Ventilating Water-closets: *W. Dalton.*—A grooved rim is shaped so that, when fitted to the top of the basin, the overlapping groove shall allow a current of air to circulate freely and collect the fumes for conveyance away through an outlet-draught pipe attached to the grooved rim; for ingress of air to the rim its plates are perforated for pipes communicating directly through the closet walls with the atmosphere outside.

25,428.—Extension Ladders: *S. T. Waggoner.*—The sides of one ladder-section travel between the sides of the other section; on the sides are bolted a pair of brackets to receive the diminished ends of a spindle having a pair of pawls rigidly mounted thereon, whose outer ends take under the rungs of and support the inner section; one knotted end of a rope passes through a screw-eye in the underside of the lowest rung of the outer section, and the rope is taken up to a sheave at the upper section's upper end and so through a second eye on the lowest rung of the outer section and thence to a third screw eye on the upper side of the rung which carries the first-named screw-eye; a pair of iron guiding-brackets are bolted to the inside surfaces of the sides of the section and adjacent to, but below, the brackets, whilst the cross-piece serves the double purpose of supporting the sheave and acting jointly with the adjacent rung, of localising the pawls and keeping them in position to engage the rung next above; at the same time they enable the rungs of the lower section to displace them sufficiently to allow that lower section to be raised.

25,802.—Connecting Sanitary Pipes: *J. E. Place.*—The improvement consists in forming in the socket end of each pipe, and in the lower part thereof a semicircular seating shaped so as to make a locking bed for the spigot end of the next pipe, which has a corresponding semi-annular projection.

23,959.—Combined Kitchen Range and Destructor: *J. B. Petter.*—The destructor is made by enclosing the ashpit with a door and frame, or lid or cover, having closely-fitting joints, the door being hinged or otherwise attached so as to give ready access to the ashpit. The door or cover has inlet apertures for supplying air to the fire and for ventilating the ashpit.

26,108.—Waste-water Latrine Closets: *W. Oates.*—The invention relates to that class of closets wherein the top of the pedestal has a flanged shoot or conical hopper as set forth in letters patent 1896—3,155. It consists in making the pedestal without a top flange, and the conical hopper with a double or compound flange fitting on the top of the flangeless pedestal. By forming the pedestal without the top flange the inventor claims to make them in an ordinary pipe-moulding machine, quickly and at a reduced cost.

26,262.—Joints in Earthenware and Other Pipes: *J. J. Green & C. L. Stiff.*—On the spigot end of the pipe, near the end of the socket when the pipes are in position, is formed an annular fillet or nug of cement so as to nearly fill the space between the spigot and socket; between the fillet and the joint is left a cavity to be filled with liquid cement poured through a hole in the socket: the outer sides of the fillet and socket may be luted with clay, and in some cases the fillet or nug in the socket can be discarded.

[1898]. 3,145.—Rulers or Squares for Geometrical and Other Drawing on Black-Boards: *J. A. Labat-Guilmant.*—The ruler, acting upon the principle of the ordinary T-square for the drawing of horizontal lines, adheres by means of a spring to the black-board, and a moveable hinged arm fitted thereto enables the operator to draw parallel lines at any angle without the aid of set-squares or other contrivances; the ruler is made of two flat pieces of wood, whereof one (A) is fixed in the stock and plays freely through a block, on both, whilst the other (B) plays freely through the stock and can be fixed to the block by means of a screw; on pressing B through the

stock the block follows, and at the same time a false stock (C) with smooth surface is pushed forward, the ruler can then be moved up and down, working upon C; upon the pressure being removed B is brought back by a spring and carries the block with it, whilst C falls back and the ruler adheres to the board by means of rubber surfaces on C and the block.

15,337.—SECURING CEILINGS, FLOORINGS, WAINSCOT, &c., TO SOLID FLOORS, ROOFS, &c.: *Dr. Adolf Katz.*—This is to be effected by means of (1) sheet metal supports or girders, having two opposite spring centre fins, between which nails may be driven, the nails firmly holding automatically between both fins; (2) bricks, blocks, or stones provided with a wooden facing attached thereto by the driving of nails into bent holes or recesses formed therein, or by the moulding in of the wooden covering in the case of, for example, cement or gypsum bricks. It is claimed that the method of construction is suitable for making domes or roofs without cradling or centre scaffolding, the sheet metal girders being in that case bent in the plane of the bar to correspond with the curve of the roof or dome.

16,359.—CONNEXIONS OR JOININGS OF COLD-LINED LEAD OR COMPOSITE PIPES: *E. Walker.*—The claim is for the method of making joints by securing brass or similar ferrules to the pipes, turning back or otherwise forming with the internal tube a flange at the tube's ferrule-end, and compressing the flanging together or against a junction piece or ferrule, also of expanding the lining tube and non-conducting material.

17,348.—A NON-SLIPPING TILE OR TREAD FOR FLOOR OR STAIR SURFACES, &c.: *A. & F. G. Johnson.*—The inventors have devised a narrow piece of the tile with a section adapted for insertion in grooves or channels formed on the floor or stair surface, to be fixed therein with cement; the tiles are fashioned to rise somewhat above the surface trodden upon.

NEW APPLICATIONS.

October 10—15.

21,247, T. J. Robinson, Wall Paper, &c. 21,253, W. Wharldall, Ladders and Step Ladders. 21,271, Jane Williams, Window Blind Rollers. 21,273, B. C. Gliddon, Levelling Rings for Setting up Theodolites and other Scientific Instruments. 21,276, W. C. Page, Sanitary Dog Kennel. 21,277, C. Griffin, Heating Burners and Furnaces and Stoves. 21,282, Ullathorne & Vacher, Rock Boring and Similar Machines. 21,285, A. G. Kent-Johnston, Lighting and Extinguishing Street and other Lamps. 21,287, F. von Demko, Road Harrow. 21,289, W. J. Wright, Water Heating and Purifying Apparatus. 21,316, R. Pelz, Domestic Fire Escapes. 21,320, R. Fletcher, Stoves. 21,328, F. T. Greenwood, 21,431, H. S. Smith, and 21,706, J. Merrett, Circular Saw and other Machine Guards. 21,342, F. C. Lynde, Raising, Lowering, Locking, and Unlocking Mechanism. 21,343, J. Hawley, Pressing and Securing Sectional Blocks of Timber to form Rectangular or Square Blocks. 21,355, S. McKnight, Tools and Tool Holders for Wood Turning Machinery. 21,357, Bushell & Tomalin, Cocks or Valves. 21,365 and 21,368, D. T. Kenney, Valves for Water-closets. 21,374, E. O. Raster, Rheostats. 21,377, Weston and Others, Spraying Apparatus for Baths, &c. 21,379, F. T. Farrar, Man-hole Covers. 21,385, W. J. Brooks, Flexible Curves for Draughtsmen's Use. 21,385, N. L. Ormidoff, Ventilating Appliances. 21,386, W. R. Baker, Coin-freed Locks. 21,410, R. Hutchison, Controlling Switches, &c. 21,416, Bertrand & Senegas, Portable Acetylene Apparatus. 21,419, L. W. Sterne, Rock Boring and Drilling. 21,453, W. M. Buchanan, Ventilating Valves. 21,460, Allen & Mayne, Gates. 21,473, G. Smith, Turn-buckles or Latch-fastenings. 21,480, C. A. W. Huttman, Channels, Tubes, and Wells for Underground Electrical Conductors. 21,491, C. J. Harvey, Removing and Collecting Dust from Floors, &c. 21,501, E. G. Lochmann & Cie., Coin-freed Electrical Apparatus. 21,509, Slaven & Penny, Lamps and Blow-pipes for Soldering Purposes. 21,511, T. F. Adamson, Connexion of Ropes to Hooks. 21,522, J. Prince, Improvements in Newcastle Kilns. 21,523, S. H. Adams, Valves and Fittings for Syphons, &c. 21,531, J. Duckett & Son and Another, Gate-posts. 21,533, T. W. James, Imitation Mica Marble and Stone. 21,535, E. S. Hermes, Disinfecting and Deodorising Apparatus. 21,539, C. G. Evans, Window-fastener. 21,542, E. W. Jones, Taps. 21,543, J. Manton, Bolts for Locking Windows, Doors, &c. 21,559, Hill & Williams, Press-cloths for Pottery Clay. 21,564, F. J. Glaholm, 21,643, W. Doman, and 21,691, Van Praag & Harker, Generation of Acetylene gas. 21,584, E. Homan, Fire-proof Floors, Ceilings, &c. 21,609, J. T. Robinson, Domestic Fire-places. 21,613, S. Robertson, Air-seal or Water-valve Devices for Syphon Discharge Fittings, &c. 21,624, Pooles, Appliance for use in Pouring "Slip" into Moulds. 21,633, G. Hookham, Electricity Meters. 21,638, Stuart & Barton, Arc Lamps for Projection, and for Laboratory and Similar Purposes. 21,644, Craws, Fire-screens, Draught-regulators, and Fire-guards. 21,646, C. J. Petrie, Sewer-gas and Foul Air Indicator. 21,648, P. Sée, Walls or Partitions for Silos, &c. 21,650, F. W. B. Langwisch, Paint-brush Holders, chiefly designed for use in Painting Floors. 21,665-6, R. Llewellyn, Adzes, Axes, Hatchets, &c., and Picks. 21,671, S. Hoffnung & Co., Window-sash Fasteners. 21,688, Bakers, Refuse Destructors, &c. 21,698, J. J. Heilmann, Steam Turbines. 21,700, G. Herbert, Compound Hinges for Casements, Doors, &c. 21,712, Heckford & Bill, Lock, Latch, and Similar Bolts. 21,716, Lord Kelvin of Largs, Electrical Measuring Instruments. 21,718, Elektricitaets Aktiengesellschaft, Electrical Arc-lamps. 21,729, A. E. Appleton, Nails. 21,730, Wareham & Upshall, Weather-tight Window Casements. 21,732, T. Jones, Door Springs and Checks for Spring Doors, also applicable for Single and Rebated Doors. 21,742, F. E. Swift, Furnaces for Brick Kilns, &c. 21,749, J. Sommer, Disinfecting Water-closets, &c. 21,755, R. S. White, Electrical Meters. 21,763, R. Pearson, Fire-resisting Composition or Coating for Wood-work. 21,771, J. R. Lamplough, Pulverising Machines.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 11.—By BRODIE, TIMBS, & Co.

Haverstock Hill.—11, Upper Pk.-rd., u.t. 52 yrs., g.r. 13*l.* 13s., e.r. 70*l.* £575

By ROGERS, CHAPMAN, & THOMAS.

Brompton.—111, Ifield-rd., u.t. 54 yrs., g.r. 8*l.*, e.r. 93*l.* 390

By DEBENHAM, TEWSON, & Co.

Hornsey.—Dickenson-rd., Holland House and about 2 acres, f. £5,000
Holborn.—73, Leather-lane, f., r. 85*l.* 1,660

By FLEURET, SONS, & ADAMS (at Masons' Hall Tavern).

Chislehurst, Kent.—"The Tiger's Head" Hotel, u.t. 23½ yrs., r. 85*l.* 2,960

By NETTLESHIP & SON (at Market Rasen).

Normanby-by-Spital, Lincs.—Freehold farmhouse and 110 a. 2 r. 39 p., r. 140*l.* 3,0 00

October 12.—By W. W. JENKINSON.

Fulham.—Darlan-rd., f.g.r. 25*l.* 4s., reversion in 94½ yrs. 625

By DUNCAN & KIMPTON.

Kentish Town.—90, Leverton-st., u.t. 67 yrs., g.r. 3*l.*, e.r. 42*l.* 520

By VENTOM, BULL, & COOPER.

Hughenden, Bucks.—Piper's Corner and Piper's Green Farm, 210 a. 3 r. 34 p.; also Springfield Lodge and 23 a. 2 r. 26 p., f. 6,390

By F. DOD & Co.

Kingsland.—70, 72, 74, and 76, Downham-rd., u.t. 10¼ yrs., g.r. 13*l.* 4s. 1,040
Highbury.—42 and 44, Elwood-st., f. 700

By HAMPTON & SONS.

Windsor, Berks.—Forest Pk. Estate, 49 a. 3 r. 33 p., f. 21,000
Putney.—265, Upper Richmond-rd., u.t. 77 yrs., g.r. 28*l.* 1,200

By WILKINSON, SON, & WELCH (at Brighton).

Brighton, Sussex.—7, Buckingham-rd., f., r. 100*l.* 1,300

By DACRE & SON (at Knaresborough).

Farnham, Yorks.—A freehold farm, area 95 a. 2 r. 16 p. 2,300

By H. R. BEATY (at Boston).

Frampton, &c., Lincs.—Two farmhouses and 546 a. 1 r. 28 p., f. and c. 16,150
Fishtoft, Lincs.—A freehold cottage and 24 a. 3 r. 31 p. 1,120

October 13.—By FAREBROTHER, ELLIS, & Co.

Westbourne Park.—Carlton-ter., f.g.r.'s of 58*l.*, reversion in 47 yrs. 2,070
Camberwell.—Camberwell-grove, f.g.r. 34*l.* 10s., reversion in 45 yrs. 995

By DOLMAN & PEARCE.

Haverstock Hill.—5 and 6, Maitland Pk.-rd., u.t. 53 yrs., g.r. 21*l.* 950
Brixton.—57, Gresham-rd., u.t. 66½ yrs., g.r. 8*l.*, r. 50*l.* 445
Overton-rd., i.g.r. 21*l.*, u.t. 63½ yrs., g.r. 1*l.* .. 455
Islington.—Ecclesbourne-rd., i.g.r. 30*l.*, u.t. 51½ yrs., g.r. nil 105
Morton-rd., &c., i.g.r. 69*l.*, u.t. 23 yrs., g.r. 40*l.* 600

By PERCIVAL HODSON.

Finchley.—Huntingdon-rd., Littleton, u.t. 98 yrs., g.r. 6*l.* 6s. 320

By C. C. & T. MOORE.

Stoke Newington.—Aden-ter., Kelvedon House, u.t. 50 yrs., g.r. nil, e.r. 90*l.* 900
Spitalfields.—1 to 15, Newman's-bldgs. (Cox's-sq.), u.t. 26 yrs., g.r. 25*l.* 1,210
4, Bell-lane, u.t. 26 yrs., g.r. 12*l.* 10s., r. 60*l.* .. 650
142 and 144, Brick-lane, u.t. 48½ yrs., g.r. 20*l.*, r. 94*l.* 1,375
Pelham-st., Newman's-bdgs. Model Dwellings, u.t. 48½ yrs., g.r. 10*l.* 1,710
Bell-lane, the Netherlands Dramatic Club, f., r. 400*l.* 6,400

By NEWBON, EDWARDS, & SHEPHARD.

Camden Town.—Arlington-rd., f.g.r. 5*l.* 5s., reversion in 21 yrs. 265
Westminster.—14 and 16, Lewisham-st., f., r. 40*l.* 550
St. Luke's.—2 to 16 (even), St. Thomas-pl., u.t. 51 yrs., g.r. 44*l.* 1,340
Clapton.—91, London-rd., u.t. 90 yrs., g.r. 8*l.*, r. 45*l.* 500
Fulham.—38 to 52 (even), Fabian-rd., f., r. 284*l.* (in lots) 4,185
Holloway.—149 to 151, Hungerford-rd., u.t. 63 yrs., g.r. 12*l.*, r. 100*l.* 1,210
Bow.—39, Alma-rd., f., r. 26*l.* 280

By STIMSON & SONS.

Holloway.—67 to 87 (odd) and 87a, George's-rd., f. 2,950
Caledonian-rd.—23, 25, and 27, Blundell-st., u.t. 52½ yrs., g.r. 18*l.* 670
Holloway.—25, Ashburton-grove, u.t. 41 yrs., g.r. 4*l.* 250
13 and 15, Cornwallis-rd., u.t. 64½ yrs., g.r. 12*l.*, r. 66*l.* 605
38, Rupert-rd., u.t. 67½ yrs., g.r. 5*l.* 190
13 and 15, Hampden-rd., u.t. 85 yrs., g.r. 12*l.* .. 420
66 and 68, Hampden-rd., u.t. 55½ and 60 yrs., g.r. 8*l.* 10s. 490
27 and 29, Milton-grove, u.t. 47 yrs., g.r. 15*l.* .. 325
Walworth.—15, Sutherland-sq., f. 425
39, Olney-st., f. 380
Anerley.—5, Seymour villas, u.t. 32 yrs., g.r. 13*l.* 1s., e r. 60*l.* 315
Canonbury.—27, Compton-rd., u.t. 46½ yrs., g.r. nil, r. 46*l.* 550
Dalston.—84, Forest-rd., u.t. 52½ yrs., g.r. 6*l.* 5s. 400
24, St. Phillips-rd., u.t. 52 yrs., g.r. 6*l.* r. 36*l.* .. 370

By FULLER, MOON, & FULLER (at Croydon).

Croydon.—335 and 339, Whitehorse-rd., f., r. 70*l.* 1,285

October 14.—By C. RAWLEY CROSS & Co.

Kensington.—Wharton-rd., f.g.r. 133*l.* 10s., reversion in 97½ yrs. 3,700
Addison Pk., f.g.r. 105*l.*, reversion in 97 yrs. .. 3,150
Shepherd's Bush. — Richmond-rd., f.g.r. 150*l.*, reversion in 999 yrs. 4,380
282a, Goldhawk-rd., u.t. 64½ yrs., g.r. 8*l.*, e.r. 80*l.* 1,000

By BEAL & MYRTLE.

Westminster.—51, York-st., u.t. 96 yrs., g.r. 45*l.*, e.r. 220*l.* 1,200

By F. J. BISLEY & SONS.

Bermondsey.—109, Drummond-rd., u.t. 46½ yrs., g.r. 3*l.* 10*l.* £350
Peckham.—6, Burchell-rd., u.t. 70 yrs., g.r. 3*l.* 10s. 300
Penge.—94, Woodbine-grove, f., r. 20*l.* 350

By SALES & CLARKE.

Plumstead, Kent.—129, Tewson-rd., u.t. 87 yrs., g.r. 3*l.* 10s. 205
17, Ingledew-rd., u.t. 64 yrs., g.r. 3*l.* 15s. 210

By A. J. SHEFFIELD.

Poplar.—45 and 46, Cotton-st. and 3, Wright's-pl., f. 620
1 and 2, Providence-pl., f. 175

By OETZMANN & Co.

Frinton-on-Sea, Essex.—Bretton House, f. 1,350

October 17.—By WEATHERALL & GREEN.

Tooting Common.—London-rd., The Chestnuts, The Firs, and Heatherhurst, area 4½ a., f. 5,150

By J. G. DEAN & Co.

Balham.—Boundaries-rd., five residences, u.t. 98 yrs., g.r. 31*l.* 10s., e.r. 180*l.* 1,600

By LEVENS, SON, & HOARE.

Beckenham, Kent.—114, High-st., u.t. 66 yrs., g.r. 6*l.*, r. 66*l.* 950

By A. H. TURNER & Co.

Elstree, Herts.—St. Mary's and half an acre, f. .. 1,350

October 18.—By E. H. HENRY.

Brixton.—35, Somerleyton-rd., u.t. 68 yrs., g.r. 8*l.*, r. 70*l.* 370
Clapham.—42, Taybridge-rd., u.t. 94½ yrs., g.r. 7*l.*, e.r. 35*l.* 360

By MIDDLETON & CRACKNELL.

Hampstead Heath.—16 and 18, South Hill Park, f., r. 96*l.* 1,475

By RUTLEY, SON, & VINE.

Euston-rd.—No. 185, f., r. 65*l.* 1,360
Camden Town.—10, Rochester-rd., u.t. 44 yrs., g.r. 4*l.*, e.r. 65*l.* 650
Hampstead-rd.—57, Robert-st., u.t. 25 yrs., g.r. 8*l.* 8s. 315

By ORGILL, MARKS, & ORGILL (at Masons' Hall Tavern).

City of London.—Aldersgate-st., The Black Horse p.-h., u.t. 55 yrs., r. 150*l.*, with goodwill 16,800

October 19.—By H. C. BIGDEN.

Battersea.—71, Meyrick-rd., u.t. 50 yrs., g.r. 3*l.* 10s., e.r. 40*l.* 350
93, York-rd., f., r. 36*l.* 8s. 450

By HAROLD GRIFFIN.

Crouch End.—49, Barrington-rd., u.t. 97 yrs., g.r. 6*l.* 10s. 305

By GEORGE BRINSLEY.

Peckham.—69, 71, and 73, Talfourd-rd., u.t. 63 yrs., g.r. 20*l.*, e.r. 110*l.* 1,130
Camberwell.—35, 37, and 39, Warner-rd., u.t. 10 yrs., g.r. 13*l.*, r. 90*l.* 330
37, Grove-lane, and 18, The Grove, f., r. 32*l.* .. 1,020
296, Camberwell-rd., f., r. 70*l.* 1,150
1 and 2, Camberwell Green, f., r. 140*l.* 4,02

By DOUGLAS YOUNG & Co.

Dalston.—67, 69, 96, and 98, Greenwood-rd., u.t. 53 yrs., g.r. 22*l.* 10s., r. 160*l.* 1,570
Camden Town.—64, Hilldrop-cres., u.t. 55 yrs., g.r. 9*l.*, r. 55*l.* 565
Stoke Newington.—8, Neville-rd., u.t. 63 yrs., g.r. 8*l.* 10s., r. 50*l.* 480
5 and 6, Clonbrock-rd., u.t. 66 yrs., g.r. 10*l.*, r. 78*l.* 600
88, Palatine-rd., u.t. 75 yrs., g.r. 6*l.*, r. 30*l.* 325
Norwood.—32 to 40 (even), Albert-rd., and 40, 42, and 44, Victoria-rd., u.t. 81 yrs., g.r. 40*l.* 1,070
Thornton Heath.—36 and 38, Beulah-rd. North, f. 560

October 19.—By SWAN WOODCOCK (at Stratford).

Forest Gate.—38, Margery Park-rd., f., r. 33*l.* 510
82 and 84, Odessa-rd., f. 470
Canning Town.—27, 29, 31, and 33, Star-st., u.t. 66 yrs., g.r. 12*l.* 3s. 310

By E. BAILEY & SON (at Newark).

Beckingham, Lincs.—Freehold farmhouse and 322 a. 3 r. 32 p., r. 280*l.* 6,800
A foreman's house and 143 a. 2 r., f., r. 140*l.* 2,850
Beckingham, Lincs.—The manor or lordship of same 100

By HUGH SWORDER (at Harlow).

Matching, Essex.—A freehold and copyhold field, 8 a. 115

October 20.—By C. C. & T. MOORE.

Mile End.—124 to 130 (even), Buxton-st., f., r. 135*l.* 4s. 1,760
24, Carlton-rd., u.t. 26 yrs., g.r. 3*l.*, r. 35*l.* 350
99 to 107 (odd), Skidmore-st., u.t. 19 yrs., g.r. 10*l.* 10s. 405
91, Skidmore-st., and 106, Ernest-st., u.t. 19 yrs., g.r. 2*l.* 19s. 170
Poplar.—67, 69, and 71, Arcadia-at., u.t. 53 yrs., g.r. 9*l.* 12s. 450
Canning Town.—34, 36, 38, and 40, Brunell-st., f. 600
Walthamstow.—Fairlight-rd., ten plots of building land, f. 465
Aldgate.—21, Burr-st., f., e.r. 50*l.* 675

By ALGERNON MOORE.

East Molesey, Surrey.—Walton-rd., freehold house and shop, with cowhouses, dairies, and plot of land, r. 55*l.* 1,450
Walton-rd., two plots of building land, f. 290
1 and 2, York-villas, f., e.r. 52*l.* 800
Kilburn.—4 and 5, Kingsgate-pl., a profit rental of 31*l.* 10s., u.t. 6 yrs., with reversion for 40 yrs. 630

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised	Premiums.	Designs to be delivered.
*Fire Brigade Station	Bradford Corp.	100*l.*, 50*l.* and 30*l.*	Jan. 2,'99
*Designs for Alterations to Workhouse	Highworth & Swindon Union	Particulars of J. P. Kirby, 42, Cricklade-st. Swindon	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Alterations to Banking Premises, Bridlington Quay	York Union Banking Co. Ltd.	B. S. Jacobs, Archt. Bowlalley-lane, Hull	Nov. 1
Underground Convenience	Fleetwood U.D.C.	E. J. Hayes, C.E. Town Hall, Fleetwood	do.
Free Library	Acton U.D.C.	Surveyor, 242, High-street, Acton	do.
Drainage Works	Barnsley R.D.C.	H. Crawshaw, Surv. 13, Regent-st. Barnsley	do.
Wesleyan Chapel, Abbeytown, Carlisle	,,	T. C. Huddart, 40, George-street, Wigton	do.
House, Udny, Aberdeen	,,	Jenkins & Mair, C.E. 16, Bridge-s., Aberdeen	do.
Additions to Wesleyan Chapel, Knaphill	Trustees	J. Weir, Archt. 17, Victoria-street, S.W.	do.
Kerbing, &c. Powell-street	Heath Town U.D.C.	R. E.W. Berrington, Engr. Wolverhampton	do.
Bank, &c. Station-road, Featherstone, near Pontefract	Leatham, Trew & Co.	Garside & Keyworth, Archts. Featherstone	do.
*Sewerage and Water Drainage	Bromley U.D.C.	Surveyor, Council Offices, Bromley, Kent	do.
*Kerbing, Paving, Metalling, &c. Gabriel-street	Lewisham Board of Works	Sur. Town Hall, Catford, S.E	do.
*Kerbing, Paving, Metalling, &c. Herschell-street	do.	do.	do.
*Wood Paving Blocks	Westminster Vestry	G. R. W. Wheeler, Town Hall, Westminster	Nov. 2
Road Works, Bill Quay	Felling (Durham) U.D.C.	H. Miller, C.E Council Offices	do.
Twelve Houses, Harrogate	,,	H. E. & A. Bown, Archts. Harrogate	do.
Additions to Church, Alnwick	,,	M. T. Wilson, Archt. Alnwick	do.
*Repairs to Two Ovens at Workhouse	Chelsea Guardians	W. Miller, 250, King's-rd. Chelsea	do.
*Making-up and Paving	Fulham Vestry	C. Stotterill, Town Hall Walham Green	do.
Waterworks	Plympton St. Mary R.D.C.	H. Francis, C.E. Devonport	Nov. 3
Granite Setts (1,700 tons)	Keighley Corp.	W. H. Hopkinson, C.E. Keighley	do.
Sewering, North-terrace	Birstall U.D.C.	W. Middlebrook, Birstall, near Leeds	do.
Pair Villas, St. John's-avenue, Bridlington Quay	,,	J. Earnshaw, Archt. Bridlington Quay	do.
Market Extensions, Godwin and James streets	Bradford Corp.	J. H. Cox, City Surv. Town Hall, Bradford	do.
Stabling, &c. Dudley Hill	Bradford Prov. Indus. Soc. Ltd.	Rycroft & Firth, Archts. Manchester-rd. Bradford	do.
Block of Buildings, Belfast	,,	J. G. Lundsay, Archt. 10, Chichester st. Belfast	do.
Schools, Lindley, Huddersfield	,,	J. Kirk & Sons, Archts. Huddersfield	do.
Hospital Additions, &c.	Widnes Corp.	F. W. Holme, Archt. Dale street, Liverpool	Nov. 4
Football Pavilion, Beech Sowerby Bridge	,,	H. Halton, Archt. Town Hall-chmbrs. Sowerby Bridge	do.
Street Works, Castleford	Whitwood U.D.C.	A. Hartley, Surv. Castleford	do.
Public Library, North William-street	Dublin Corp.	City Archt. City Hall, Cork Hill, Dublin	Nov. 5
Police Station	Macclesfield Corp.	E. E. Adshead, Town Hall	do.
Two Houses, Buckie, N.B.	,,	J. Perry, Archt. Buckie	do.
*New Road	Hornsey U.D.C.	E. J. Lovegrove, Offices, Southwood-lane, Highgate	Nov. 7
*Supply and Fixing of Library Fittings	do.	do.	do.
*Paving Works	Beckenham U.D.C.	J. A. Angell, Council Offices	do.
Institute, Haltwhistle	Committee	Oliver & Co. Archts. Carlisle	do.
*Mason and Iron and Steel Work at Hotel, Edinburgh	Caledonian Ry. Co.	Paddie & Washington Brown, 8, Alleyn-place, Edinburgh	do.
*Town Hall and Offices	Hitchin U.D.C.	E. W. Mountford, 17, Buckingham-st. W.C.	Nov. 8
Road Works, Milton-road, &c.	Margate T.C.	A. Latham, C.E. Municipal-bldgs. Margate	do.
Hotel, Windermere	Birkett's Trustees	J. Banks, Surv. Kendal	do.
Cottages, Prosthope	G. W. Ry. Co.	G. K. Mills, Paddington Station, W.	do.
*Road Making and Sewer Works	Willesden D.C.	O. C. Robson, Public Office, Dyne-road, Kilburn, N.W.	do.
*Road Making and Paving	do.	do.	do.
*Portland Cement	Hackney Vestry	J. Lovegrove, Town Hall, Hackney, N.E.	Nov. 9
*Iron Bridge at Infirmary	Hackney Union	F. R. Coles, Clerk's Office, Sidney-road, Homerton, N.E.	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Additions to Workhouse	Medway Union	G. E. Bond, Archt. High-street, Rochester	Nov. 9
House, Annacarthy, nr. Tipperary	,,	Rev. Father Connery, C.C. Annacarthy, Tipperary	Nov. 10
*Trial Boring for Water	Greenwich Union	T. Dinwiddy, 5, Whitehall, S.W.	do.
Sewage Works	Coventry Corp.	J. Mansergh, Engr. 5, Victoria-street, Westminster, S.W.	Nov. 12
Market	Launceston T.C.	O. B. Peter, Archt. Launceston	do.
*County Court and Inland Revenue Office, Wigan	Comrs. H M Works	Offices, Storey's Gate, S.W.	Nov. 14
Offices, Albert-street	Cork Electric Tramway Co.	R. Walker, Archt. 17, South Mall, Cork	do.
*Fire Engine, Fire Escape, Street Alarms, Fire Bells, &c.	Acton D.C.	D. J. Ebbetts, 242, High-street, Acton, W.	Nov. 15
*Making-up Roads	Tottenham U.D.C.	P. E Morphy, 712, High-road, Tottenham	do.
*Supply and Laying of York Paving	do.	do.	do.
*Sewage Disposal	Aylesbury U D C	W. F. Taylor & Sons, Aylesbury	Nov. 16
Additions to Schools, Barrasford	,,	Armstrong & Knowles, Archts. 34, Grainger-st. West. Newcastle-on-Tyne	Nov. 18
Sewerage Works	Ashton-under-Lyne Corp.	J. T. Earnshaw, C.E. Town Hall	Nov. 21
Schools, Pontlottyn	Gellygner Sch. Bd.	James & Morgan, Archts. Cardiff	do.
Timber Pier, Broadhaven, co. Mayo	Board of Public Works Ireland	D. & C. Stevenson, C.E. 24 George-st. Edinburgh	do.
*Chapel	Parc Gwyllt Asylum, Bridgend	Giles, Gough, & Trollope, 28, Craven-s. W.C.	Nov. 24
Infant School and Additions	Llanelly Sch. Bd.	J. & M. Morgan, Archt. Llanelly	Nov. 30
*Works in connexion with Tunnel under Thames	L.C.C.	Engr's. Dept. County Hall, Spring Gardens, S.W.	Jan. 24,'99
Painting, &c. The Athenæum, King's Lynn	,,	W. Jarvis, Archt. Market-square, Lynn	No date
*Bridge, Approaches, Making-up Roadway, Channelling, &c.	Executive Committee	Wigg, Oliver, & Hudson, 80, Lemon-st. E.	do.
*Bridge Approaches, &c. over Railway	Late Viscount Iveresley Trustees	do.	do.
Alterations to Church, Bankfort, N.B.	,,	W. Constable, Archt. 20, George-street, Edinburgh	do.
Additions to Workhouse, Clatterbridge	Wirral Union	C. O. Francis, Archt. 5, Richmond-st. Liverpool	do.
*Workhouse Infirmary	Alcester Union	S. A. Gothard, Union Offices, Alchester	do.
Store Premises, Saltwell-road, Gateshead	,,	E. Bowman, Archt. 52, Westgate-road, Newcastle	do.
Laying Gas Mains, &c.	Knottingley Gas Co.	B. Arnold, Gas Offices, Knottingley	do.
Sewerage Works, &c. George-lane	Bradbury & Romily U.D.C.	W. Spinks, Engr. Prudential-buildings, Leeds	do.
Additions to Houses, Millhough, Larkhall	,,	N. Dodd, Millhough	do.
Works at Parish Church, South Scarle, Lincs.	,,	Vicar, The Vicarage, South Scarle	do.
Shops and Offices, High-street, Lincoln	,,	W. Mortimer & Son, Archt. Lincoln	do.
Two Cottages, Canwick, Lincs.	,,	W. Scorer, Archt. Bank-street Chambers, Lincoln	do.
Schools, Darfield	,,	A. B. Linford, Archt. Kelvin Cottage Wombwell, nr. Barnsley	do.
Additions to House, Ulverston	Dr. Ashburner	Settle & Farmer, Archts. Ulverston	do.
Water Works Extension, New Cumnock	Ayrshire C.C.	Warren Stuart, C.E. 115, Wellington-st. Glasgow	do.
Two Shops, Leeds	Gibbs & Co.	W. Hill & Son, Archt. 25, Park-square, Leeds	do.
Residence, Liss, Hants.	,,	H. T. Keates, Archt. Peters field	do.
Additions to Business Premises, Rotherham	W. Crooks	H. L. Tacon, Archt. Rotherham	do.
*Additions to Hospital	Bromley & Beckenham Joint Hospital Bd.	J. Ladds, 7, Doughty-st. Mecklenburgh-sq. W.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Clerk of Works	Shoreditch Vestry	3*l.* 3*s.* per week	Nov. 2
*Architectural Draughtsman	L.C.C.	3*l.* 3*s.* per week	do.
*Clerk of Works also Superintendent of Cleansing	Limehouse B. of W.	2*l.* 10*s.* and 2*l.* per week	Nov. 7
*Assistant Sanitary Inspector	Willesden U.D.C.	and uniforms respectively 100*l.* rising to 150*l.* per annum	Nov. 8
*District Road Surveyor	Birmingham Corp.	130*l.* per ann. to commence	Nov. 11
*Second Assistant to Borough Engineer	Hanley Corp.	80*l.* rising to 100*l.*	Nov. 12
*Superintending Architect	L.C.C.	1 500 per annum	Nov. 14
*Manager for Sewage Farm	Longton Corp.	150*l.* per annum and residence	Nov. 19

Those marked with an asterisk (*) are advertised in this Number. ***Competitions*, p. iv.** ***Contracts*, pp. iv. vi. viii x. & xvii.** ***Public Appointments*, pp. xv. & xvii.**

By G. Trollope & Sons.

Chelsea.—12, Cadogan-gardens, u.t. 79 yrs., g.r. 85*l.* £5,500

By Beadel, Wood, & Co.

Blackheath.—Shooter's Hill-rd., f.g. rents 244*l.*, reversions varying from 21 to 45 yrs. (in lots) .. 11,930
St. John's Pk., f.g. rents 251*l.* 11s. and a peppercorn g.r., reversion in 52 yrs. 9,370
Vanbrugh-ter., f.g. rents 102*l.*, reversions in 43 and 44 yrs. 4,750
St. John's Pk., f.g.r. 208*l.* 19s. 8d., reversions in 48 and 52 yrs. 7,290
St. John's Villas, f.g.r. 42*l.* 18s. 4d., reversion in 48 yrs. 1,560
Vanbrugh Pk. (including the Royal Standard p.h.), f.g.r. 27*l.* 12s., reversion in 40 yrs. 2.650
Vanbrugh Pk., f.g.r. 419*l.* 2s., reversions varying from 45 to 63 yrs. 14,935
Westcombe Hill, 3 peppercorn ground rents, reversion in 83 yrs. 165
Westcombe Hill, f.g.r. 43*l.* 6s., reversion in 83 yrs. 1,350
Westcombe-ter., f.g.r. 102*l.* 10s., and a peppercorn g.r., reversions in 81 and 83 yrs. 3,225
Westcombe Hill, f.g.r. 18*l.* 18s., reversion in 74 yrs. 590
Greenwich.—Horn-lane, a freehold wharf and land, r. 120*l.* 15s. 3,000
Greenwich Marshes.—A block of riverside building land, area 14 a., f. £7,000

By H. J. Bliss & Sons.

City of London.—Aldersgate-st., f.g.r. 205*l.*, reversion in 80 yrs. 7,000
2, 4, and 6, Shaftesbury-pl., f., r. 124*l.* 16s. 1,470
St. Leonards-on-Sea, Sussex.—East Ascent, f.g.r. 110*l.*, reversion in 20 yrs. 3,580
Stepney.—Ben Jonson-rd., f.g.r. 42*l.*, reversion in 14 yrs. 1,930
Ben Jonson-rd., f.g.r. 13*l.*, reversion in 18 yrs. .. 450
Bethnal Green.—8, Church-row, f. 395
Hackney.—4, St. John's Church-rd., f., r. 32*l.* 505
Clapton.—Chatsworth-rd., f.g.r. 13*l.*, reversion in 80 yrs. 285
East Ham.—Ranelagh-rd., f.g.r. 24*l.*, reversion in 83 yrs. 520
Tottenham.—Heybourne-rd., f.g.r. 22*l.*, reversion in 89 yrs. 540
73, Somerset-rd., f. 210
Plaistow.—21 to 31 (odd), Peter-st., u.t. 65 yrs, g.r., 24*l.* 805

By Newbon, Edwards, & Shepherd.

Caledonian-rd.—1 and 2, Balmoral Grove, u.t. 63 yrs., g.r. 12*l.* 480
Barnsbury.—151, Hemingford-rd., u.t. 44 yrs., g.r. 7*l.*, e.r. 55*l.* 470
Highbury.—187, 199, and 201, Blackstock-rd., u.t. 27 yrs., g.r. 30*l.*, r. 145*l.* £1,520

By Proctor & Walker.

Norton Folgate.—White Lion-st., Job's Castle p.-h., f.g.r. 70*l.*, reversion in 33 yrs. 2,540

October 21.—By H. G. Potter.

Hampstead Heath.—Elm-row, Lawn House, f. .. 2,750

By H. Bond & Son.

City of London.—17, Staining-lane, u.t. 27 yrs., g.r. 79*l.* 10s., r. 240*l.* 810

By W. B. Hallett.

Holloway.—13 to 25, Loraine-pl., u.t. 14 yrs., g.r. 210*l.*, r. 873*l.* 4,000
21, Spencer-rd., u.t. 49½ yrs., g.r. 6*l.* 6s., r. 33*l.* 445
108, Hornsey-rd., u.t. 44 yrs., g.r. 6*l.*, r. 50*l.* 460
Clapham.—24, Larkhall Rise, u.t. 24 yrs., g.r. 8*l.*, e. 50*l.* 280

***Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.**

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	0/0/0
Teak, E.I. ....load	10/10/0	15/10/0
Sequoia, U.S.ft.cu.	1/9/0	2/2/0
Ash, Canada, load	3/15/0	5/0/0
Birch, do.	3/10/0	5/10/0
Elm, do.	4/10/0	5/10/0
Fir, Dantsic, &c..	2/15/0	4/15/0
Oak, do.	2/2/6	4/2/6
Canada	4/2,6	6/c/o
Pine, Canada red	0/0/0	0/0/0
Do. yellow	4/2/6	6/0/0
Lath, Dantsic,fath	4/10/0	5/10/0
St. Petersburg..	c/0/0	6/10/0
Wainscot, Riga, &c., log	4/15/0	6/5/0
Odessa, crown....	4/15/0	6/5/0
Deals, Finland 2nd & 1st std 100	9/5/0	9/15/0
Do. 4th & 3rd ..	9/5/0	9/15/0
Do. Riga	7/15/0	8/15/0
St. Petersburg, 1st yellow	11/5/0	13/15/0
Do. 2nd yellow.	10/5/0	11/15/0
Do. white	9/5/0	11/5/0
Swedish	9/5/0	16/5/0
White Sea	10/5/0	17/10/0
Canada, Pine 1st	18/0/0	24/10/0
Do. do. 2nd	13/0/0	16/10/0
Do. do. 3rd, &c.	6/0/0	9/10/0
Do. Spruce, 1st	8/10/0	10/10/0
Do. do. 3rd and 2nd	7/0/0	8/10/0
New Brunswick	7/0/0	8/0/0
Battens all kinds	5/0/0	16/0/0
Flooring boards, sq., 1 in. prep. 1st	9/0	16/3
Do. 2nd	c/8/3	0/13/3
Other qualities—	6/6	7/0
Cedar, Cuba, ft.	/4	/4½
Honduras, &c.	/3½	/4½
Mahogany, Cuba	/5½	/7
St. Domingo, cargo av.	/5	0/1/3
Mexican, do. do.	/3½	/4
Tobasco, do. do.	/4	/6½
Honduras, do.	/4	/6
Box, Turkey, ton	4/0/0	15/0/0
Rose, Rio	7/0/0	14/0/0
Bahia	6/0 0	12/0/0
Satin, St. Doming.	0/0/5	0/1/0

TIMBER *(continued)*.		
Satin, Porto Rico	0/0/9	0/2,0
Walnut, Italian ..	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	2/9/1½	0/0/0
Bar, Welsh, in London	6/0/0	6/5/0
Do. do. at works in Wales	5/15/0	5/17/6
Do. Staffordshire, in London.....	6/5/0	7/10/0
COPPER—British cake and ingot	57/10/0	57/15/0
Best selected ..	57/15/0	58/5/0
Sheets, strong..	63/0/0	64/0/0
Chili bars	53/12,6	0/0,0
YELLOW M. L. lb.	5d.	5⅜d
LEAD—Pig Spanish ....ton	13/2/6	0/0/0
English com. bands	13/5/0	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..	14/7,6	0/0/0
Pipe.....	14/17/6	0/0/0
ZINC—English sheet.....ton	27/5/0	0/0/0
Vieille Montagne	28/5/0	0/0/0
Spelter	23/10/0	23/15/0
TIN—Straits	80/16/3	0/0/0
Australian.....	81/7/6	81/15/0
English Ingots..	83/10/0	84/0/0
Banca	0/0/0	0/0/0
Billiton	c/0/0	0/0/0
OILS.		
Linseed .....ton	17/15/0	0/0,0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon	24/10/0	0/0/0
Palm, Lagos	21/15/0	0/0/0
Rapeseed, English pale	23/5/0	0/0/0
Do. Brown	21/15/0	0/0/0
Cottonseed ref. ..	15/0/0	16/0/0
Oleine.....	17/0/0	18/0/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black	0/5/0	0/6/6
TAR—Stockholm barrel	1/5/0	0/0/0
Archangel.....	0/18/0	0/0/c
Turpentine	26/15/0	c/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100 unless in some exceptional cases and for special reasons.]

ABERDEEN.—For the erection of a bridge at the Links, for the Town Council. Mr. J. Rust, City Architect, Town House, Aberdeen. Quantities by architect:—

Gall & Walker	£540 16 0	Scott & Sellar	£357 19 0
Charles Gordon	429 15 0	John Morgan	355 0 0
Pringle & Slessor	419 0 0	Thomas Grant	350 10 0
F. Bisset & Son	373 15 0	Leslie Smith	347 0 0
Edgar Gauld	371 16 3	Geo. Hall	337 10 0
A. Milne & Son	369 18 0	Geo. Fordyce & Co.,	
Robert Beattie	365 10 c	Aberdeen*	350 0 0

* Accepted.

BELVEDERE.—For the erection of six cottages at Parsonage Farm, Belvedere, Kent, for the trustees of the late Lord Wynford. Mr. G St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington, Kent:—

G. Miles	£1,998	Stebbings & Pannell	£1,683
S. H. Gunning	1,820	F. Hind	1,550
T. Knight	1,729		

BLACKFINE (Durham).—For the formation of new street, for the Benfieldside Urban District Council. Mr. J. Dixon, Surveyor, District Council Offices, Benfieldside. Quantities by Surveyor:—

T. Hogg	£162 0 0	G. Christopher, Queen-street, Blackhill*	£101 19 8

* Accepted.

BOSTON (Lincs).—Accepted for the erection of an engine- and boiler-house (iron building), for the Boston Harbour Commissioners. Mr. W. H. Wheeler, C.E., Market-place, Boston:—

Geo. White, Boston, Lincs. £182 10

BRADFORD.—Accepted for the erection of a shed, Brick-lane Mills. Messrs. Isitt, Adkin, & Hill, architects, Prudential-buildings, Bradford:—

Masonry.—Wallace Daykin, Valley-parade, Manningham £773 0 0
Joinery.—W. C. Bogg, Manningham 321 0 0
Plumbing.—Herbert Hill, Westgate, Bradford 119 0 0
Slating.—James Smithies, Great Horton-road, Bradford 198 15 0
Painting.—A. H. Bassett, City-road, Bradford 23 15 10½
Ironfoundry.—E. & W. H. Haley, Thornton-road, Bradford..... 171 5 0

BRIDGWATER.—For kerbing, paving, making-up, &c., Washington-terrace and Washington-gardens, for Bridgwater Town Council. Mr. Francis Parr, Engineer and Surveyor, Municipal Offices, Bridgwater. Quantities by Messrs. Samson & Cottam, Bridgwater and Taunton:—

For Washington-terrace,

E. Duke	£941 6 3	C. Bryer, Bridgwater (accepted)	£820 9 0
Newton & Grounds	925 8 4		

For Washington-gardens.

E. Duke	£309 8	C. Bryer, Bridgwater (accepted)	£204 14
Newton & Grounds	208 0		

BURTON-ON-TRENT.—For the erection and completion of a range of stabling, caretaker's house, and boundary walls, at Shobnall-street, for the Burton-on-Trent Co-operative Society, Limited. Mr. R. Stevenson, architect, Imperial Chambers, High-street, Burton-on-Trent. Quantities by the architect:—

A. Geary	£2 793 0	T. Lowe & Sons	£2,449 0
J. & T. W. Selby	2,780 10	T. Chamberlain	2 437 0
G. Hodges	2,600 0	R. Kershaw	2,399 0
H. Edwards	2 530 0	W. A. Stevenson*	2,355 0
Chamberlain Bros.	2,502 0		

* Accepted.

CAMBORNE.—For the erection of masonic buildings. Mr Sampson Hill, architect, Redruth:—

C. & J. Harris	£1,142 15 0	Trounson & Mitchell	£889 0 0
J. Berryman	1,050 0 0	W. C. Hodge	854 0 0
Trounson & Haslett	1,013 0 0	Barberry & Mitchell,	
Whyte & Moffat	891 0 0	Camborne & Crowan*	827 8 7

* Accepted.

CORNWALL.—Accepted for billiard room and bedrooms, additions to Torfrey, Cornwall, for Mr. W. G. Mills. Mr. Sampson Hill, architect, Redruth:—

N. Penter, Pobman £550

CROYDON.—For erecting the "Leslie Arms" Hotel, and four shops adjoining, for Messrs. Nalder & Collyer, Limited. Messrs. Berney & Sons, architects and surveyors, Croydon:—

Edwards & Medway	£10,700	J. Smith & Sons	£10,420
J. J. Carrick	10,566	S Hart	10,297
Lorden & Sons	10,540	E. P. Bulled & Co.	10.050
W. H. Lascelles & Co.	10,497	Hansroomb & Smith	9,463
Patman & Fotheringham	10 475	E. J. Saunders	9,400
Josolyne & Young	10 455	F. Bullock	9,384
S. J. Jerrard & Sons	10,439	S. Page	9,028
J. Carmichael	10,400	D. W. Barker, Croydon*	8,937

* Accepted.

EVESHAM.—For building a bridge, &c., Bengeworth and Badsey, for the Urban District Council:—

Thos. Vale Stourport, Evesham £203

FARNBOROUGH.—For the erection of a new Girls' School at Farnborough, Kent. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington. Quantities by Messrs. Sanger & Son:—

G. E. Wallis & Sons	£3,178	F. Jones	£2,975
J. C. Arnaud & Son	3,134	H. Somerfurd & Son	2,960
W. Holt & Son	2,999	T. D. Graty*	2,858

* Accepted.

FEATHERSTONE (Yorks.).—For laying 2½ miles of water mains for the Urban District Council. Mr. W. A. Palliser, engineer, Council Offices, Featherstone:—

	Per yard laying.		Per valve fixing.		Per chamber.
	s. d.		£ s. d.		£ s. d.
T. Rowland	1 5½	....	0 2 6	....	0 6 0
Jenkins & Son	3 0	....	0 7 6	....	0 7 6
E. Cheetham	3 0	....	2 10 0	....	—
W. Doleman	1 9	....	0 15 0	....	—
W. Barrick	1 0	....	—	....	—
M. Arundel	1 6	....	0 10 0	....	—
A. Henson, Leeds*	1 3½	....	0 10 0	....	—
H. W. Jowitt	2 0	....	0 3 0	....	0 10 0

* Accepted.

HELSTON (Cornwall).—Accepted for music-room and bedrooms and alterations to stables at Bonallack, Helston, for Mr. F. C. Baddeley. Mr. Sampson Hill, architect:—

W. J. Winn, Helston £706

ILKLEY.—For the erection of a detached house. Messrs. Isitt, Adkin, & Hill, architects, Prudential Buildings, Bradford:—

Masonry.—S. Mounsey & Son, Oxford-road, Guiseley £595 0
Joinery.—J. & B. Emmott, Addingham 400 0
Plumbing.—T. L. Nelson, 5, Wharfe-view, Ilkley .. 192 0
Slating.—R. Nelson, 5, Wharfe-view, Ilkley.. ..... 64 10
Plastering.—F. Dean, Stott Hall, Clayton Heights, Bradford 144 0

KINGSCLERE (Hants).—For the erection of six cottages, for the Ancient Order of Foresters. Mr. W. H. Bell, architect, Market-place, Newbury:—

Hoskings	£1,700	Garrett	£1,152
Bance	1,520	Head, Burghclere*	1,140

* Accepted.

LEDBURY.—For the execution of sewerage works, for the Urban District Council Mr. R. E. W. Berrington, engineer, Bank-buildings, Wolverhampton:—

J. Braithwaite & Co.	£4 007	J. McKay	£2,876
J. Smith	3,397	J. Owens	2 849
J. Meredith	3,374	H. Holloway	2,733
H. Vale	3,063	J. Bentley	2,616
G. Law	2,878	Johnson Bros., Hereford*	2,598

(Engineer's estimate, £2,700.]

* Accepted.

LEICESTER.—For additions to museum buildings, Hastings, street, for the Corporation. Mr. Geo. Mawbey, C.E., Town Hall, Leicester:—

T. F. Scott	£1,912 4 1	J. Riddett & Son	£1,728 0 0
W. G. Harrison	1,872 7 11	W. Haddon	1,701 0 0
F. Neal	1,860 0 0	Clark & Garrett	1,696 15 0
J. E. Tyers	1,832 0 0	H. T. & W. Chambers	1,635 2 6
J. E. Johnson & Sons	1,830 13 9	T. Herbert, Welford-road, Leicester*	1,608 0 0
G. Brown & Son	1,787 0 0		
H. Herbert & Sons.	1,746 10 0		

* Accepted.

LEYTON (Essex).—For widening part of Grove Green-road, for the Urban District Council. Mr. W. Dawson, C.E., Town Hall, Leyton:—

G. J. Anderson	£874 7 6	W. & C. French, Buckhurst Hill*	£734 0 0
Geo. Wilson	791 13 0		
Wm. Griffiths	£769 15 10		

* Accepted.

Surveyor's estimate £830

LONDON.—For the erection of two shops in the Harrow-road and Wellington-road, W., for Mr. Edward Reed. Mr. G. H. Green, architect, 340, High-road, Kilburn, N.W., and Chesham, Bucks. Quantities by Mr. Henry Bushell, 33, New Bridge-street, E.C.:—

Yesbury & Sons	£3,039	J. Bennet	£3,200
Langley & Pinkham	3,789	W. H. Stone	3,100
Ransom & Co.	3,768	G. Neal	2,997
Cowley & Drake	3,745	T. W. Rhodes, Stoke Newington (accepted)	2,965
Oldrey & Son	3,250		

LONDON.—Accepted for alterations and additions at "Beechfield," Wigmore-road, Bromley, for Mr. W. Cave. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C.:—

J. Appleby, Cornwall-road, S.E. £753

LONDON.—For new detached residence at Westmoreland-road, Bromley, for Mr. John Bransdon:—

Stebbings & Pannett	£2,283	J. Appleby, Cornwall-rd*	£1,997
Knight	2,047		

* Accepted.

LONDON.—For new factory at Marigold-street, Bermondsey Mr. Edward Crosse, architect:—

F. & H. F. Higgs	£4,160	J. Chalkley	£3,997
Josolyne & Young	3,247	B. Wells (accepted)	2,949

LONDON.—Accepted for alterations and fittings, No. 137, Cheapside, for Messrs. Cave & Benoist. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C.

LONDON.—For the supply of gas-engines for the Lots-road pumping station, for the London County Council:—

Crossley Bros., Ltd.	£10,744 6 5	J. E. H. Andrews & Co., Ltd.	£10,360 0 0
J. Taylor & Sons, Ltd.	10,622 0 0	Campbell Gas-Engine Co., Ltd.	10,000 0 0
Fielding & Platt, Ltd.	10,452 0 0	Premier Gas-Engine Co., Ltd.	9,590 0

LONDON.—For the erection of a Nurses' Home for the Royal Hospital for Consumption, Brompton, S.W. Mr. Edwin T. Hall, architect, 57, Moorgate-street, E.C.:—

Cubitt & Co.	£39,806	G. & H. Bywaters	£33,680
Leslie & Co.	39,651	Higgs & Hill	33,244
Henry Lovatt	34,176	Lawrence & Son	32,954
Woodward & Co.	33,890	Foster & Dickson	32,476
Kilby & Gayford	33,774		

LONDON.—For new bakery for Messrs. Spratt's Patent:—

Whitehead & Co.	£17,820	Patman & Fotheringham	£16,959
H. J. Williams	17,725	W. Shurmur	16,900
Kerridge & Shaw	17,241	S. J. Jerrard & Sons	16,721
Beer & Gash	17,225	H. & F. Higgs	16,713

LONDON.—For reinstating after fire, Eagle Wharf, Stepney. Mr. A. E. Pridmore, architect:—

W. Shurmur	£940	Ashby Bros.	£900
W. A. Wagstaffe	920		

LONDON.—For painting, &c., at the City of London Distillery, Finsbury. Mr. J. Hamilton, architect:—

Haywoth & Son	£189	W. Shurmur	£144
Conning & Son	145		

LONDON.—Accepted for alterations and additions to "The Atlantic" public-house, 389, Coldharbour-lane, Brixton, S.W., for Mr. W. P. Chapman. Mr. A. B. Robb, architect:—

Spencer & Co., Lambeth £4,297

LONDON.—For new schools at Bethnal Green, for St. John's Church. Mr. A. Cox, architect:—

McCormick & Son	£6,833	W. Shurmur	£6,666
Chessum & Son	6,829	Harris & Wardrop	6,537
Knight & Son	6 784	J. Wall & Co.	6,488
Outhwaite	6,7,9		

LONDON.—For erecting the Tower Brewery. Mr. H. M. Wakely, architect:—

Patman & Fotheringham	£3,790	W. Shurmur	£3,173
Lamble	3,351	Higgs	3,079
Toms	3,250	Cousell Bros.	2,848
Lascelles	3,189		

LONDON.—For addition and alterations to Thorn House, 95, Grove-park, Camberwell, S.E., for Mr. J. Huckell. Mr. A. E. Mullins, architect, 97, Barry-road, East Dulwich, S.E.:—

Ward & Son	£503 0	G. Payne (accepted)	£493 5

LONDON.—For alterations, &c. (exclusive of glazing), at "The Albert Hotel," Victoria-street, S.W., for Mr. J. Rumsey. Mr. A. E. Mullins, architect, 97, Barry-road, East Dulwich, S.E.:—

F. Hopkins	£589 10	J. Tyerman*	£495 10
J. Parsons	545 10		

* Accepted.

LONDON.—Accepted for the erection of a villa known as "Lockbrook," Crebor-street, Dulwich, for Mr. J. Hiscox. Mr. A. E. Mullins, architect, 97, Barry-road, East Dulwich, S.E.:—

Cornell £400

MIDDLESBROUGH.—For alterations, &c., to "Britannia" Hotel, East-street, for the North-Eastern Breweries Company, Limited. Mr. J. Mitchell Bottomley, architect, 28, Albert-road, Middlesbrough. Quantities by architect:—

Howe & Co.	£1,750	Bastiman Bros., Middlesbrough (accepted)	£1,555
Allison Bros.	1,600		

LONDON.—For making-up Felden-street and Friston-street, for the Fulham Vestry. Mr. C. Botterill, Surveyor, Town Hall, Walham Green, S.W.:—

Friston-street.

—	Roadway.	Paving.		
		York Stone.	Victoria Stone.	Imperial.
J. Mears, Fulham	£225 0 0	—	—	—
H. Greenham, Hammersmith	225 0 0	—	—	—
E. Parry, Fulham	255 0 0	—	—	—
Nowell & Co, Kensington	234 0 0	£151 0 0	—	—
Wimpey & Co., Hammersmith	256 0 0	—	—	—
Imperial Stone Company, East Greenwich	—	—	—	£97 0 0
Victoria Stone Company, Bishopsgate-street, E.C.	—	—	£90 0 0	—

Felden-street—Sec. 1

J. Mears, Fulham	£212 0 0	—	—	—
H. Greenham, Hammersmith	219 0 0	—	—	—
E. Parry, Fulham	202 0 0	—	—	—
Nowell & Co., Kensington	209 0 0	169 0 0	—	—
Wimpey & Co, Hammersmith	225 0 0	—	—	—
Imperial Stone Company, East Greenwich	—	—	—	119 0 0
Victoria Stone Company, Bishopsgate-street, E.C.	—	—	105 0 0	—

NANTWICH. — For the execution of water supply works Alpraham and Calveley, for the Rural District Council. Mr. J. A. Davenport, C.E., 152, Hospital-street, Nantwich :—

Alpraham.—Pipe-laying.

Jenkins & Son	£743 3 0	Henry Dodd	£357 4 0
T. Rowland	518 18 6	John Dodd	342 4 0
Geo. Newall	405 16 6	Samuel Wood, Small-mur-road, Crewe*	334 10 0
Josiah Dale	371 7 0		
J. T. Greety	370 16 0		

* Accepted.

Alpraham and Calveley.—Messrs. Cochrane & Co.'s (Dudley) tenders for pipes were accepted, and Messrs. Blakeborough & Sons' tenders for hydrants, valves, and fittings.

Calveley.—Pipe-laying.

Geo. Newall	£370 4	Henry Dodd	£337 12
J. Dale	356 15	John Dodd, Winsford, Cheshire (accepted)	307 15
J. T. Greety	352 0		

ORPINGTON (Kent).—For repairs to private residence. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, and Orpington :—

Somerford & Son £142 10

ORPINGTON.—For the additions and alterations to the Baptist Chapel, Orpington, Kent. Mr. G. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington :—

Stebbings & Pannett	£827	Somerford & Son*	£767
T. Knight	822		

* Accepted.

ORPINGTON.—For the laying of a new sewer, with connexions, of two private houses to same at Crofton, Orpington, Kent. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger-lane, E.C. :—

F. P. Duthoit	£1,583 0 0	J. Jackson	£912 18 8
T. Lansbury	1,070 15 0	Stebbings & Pannett	841 13 0
Peill & Sons	1,018 0 0	Somerford & Son	720 0 0
ogers	950 0 0		

PONTARDULIAS.—For the erection of a school at Pontardulias, for the Llandilo Talybont School Board. Mr. J. B. Morgan, architect, Llanelly :—

H. Billings	£3,150	G. Mercer	£2,948
E. Morgan	3,010	Brown, Thomas, & John	2,879
W. Gregory	2,999	W. Hopkins	2,5 0

POOL (Cornwall).—For alterations to Free Church, Pool, Carn Brea. Mr. Sampson Hill, architect, Redruth :—

W. H. Moyle	£293 0	*Carpentry.*	
W. C. Hodge	288 0	W. H. Gray, Redruth	£66 18
T. Willoughby	213 10	*Masonry.*	
		John Roberts, Pool*	280 6

* Accepted.

PORT TALBOT (Wales).—For the erection of drill-hall, &c., at schools. Mr. F. B. Smith, architect, Port Talbot :—

T. P. Stevens	£1,295 15 0	Jno. Davis	£925 0 0
Evan Thomas	1,096 0 0	Leverton Bros.	910 10 0
Morgan Cox	1,049 0 0	Jno. Nicholas, Port Talbot (accepted)	905 0 0
Stephen Rees	1018 6 8		

ROMFORD (Essex).—For the erection of public baths, for the District Council. Messrs. Harrington & Ley, architects, 108, Fenchurch-street, E.C. Quantities by Mr. H. W. Simpson, 108, Fenchurch-street, E.C. :—

W. Gregar & Son	£6,764	Kingerlee & Son	£6,025
Balaam Bros.	6,280	T. Bruty, Hornchurch*	5,682
Coulson & Lofts	6,066	F. Wilmott	5,588

* Accepted, conditionally.

SNARESBROOK (Essex).—For erecting a house at Snatesbrook' Mr. E. Bates, architect :—

Snewin Bros.	£2 970	W. Shurmur	£2 682
Smith & Son	2,887	Smith & Son	2,648
Jolliffe & Son	2,870 2,672	Wells	0,638
		Holt & Sons	2,600

SOUTHBOROUGH (Kent).—For the erection of Victoria Hall and buildings, London-road, for the Urban District Council. Mr. Wm. Harmer, surveyor, 137, London-road, Southborough. Quantities by Mr. C. Norton, Tunbridge Wells :—

K. Jarvis	£4,620	Strange & Son, Tunbridge Wells*	£3.994
Alliance Building Society	4,217	Logan	3.837
Crates & Son	4,190	Avard	3,821
John Jarvis	4,100		
Punnett & Son	4,097		

* Accepted.

ST. MARY CRAY.—For the execution of building works at Effingham Lodge, St. Mary Cray, Kent. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington :—

J. Lonsdale	£153	Somerford & Son	£120
Stebbings & Pannett	150		

SWANLEY.—For the erection of a further block of eight cottages at Swanley, Kent. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington :—

Stebbings & Pannell £1,848

SWANLEY.—For the erection of eight] cottages at Hextable-road. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington :—

T. Lonsdale	£1,876	T. Knight	£1,789
Stebbings & Pannett	1,800		

WALDRON (Sussex).—For additions to "Tanners Manor," for Mr. B. S. Hassell. Mr. R. C. Tuppen, architect, Balham. Quantities by the architect :—

Penn	£1,943 5	Strange & Sons, Tunbridge Wells*	£1,909 0

* Accepted.

WALTHAMSTOW.—For six houses at Walthamstow. Mr. R. J. Luter, architect :—

J. A. Read	£1,819	G. W. Barker	£1,775
W. Shurmur	1,798		

WALTHAMSTOW.—For the erection of premises at Hoe-street, Walthamstow, for Messrs. Pickford & Co. Mr. Peter Dollar, architect :—

Patman & Fotheringham	£8.891	W. Shurmur	£7,803
Sheffield Bros.	8,245	Carmichal	7.798
J. Grover & Son	7,982	Higgs	7.576
Dove Bros.	7,925		

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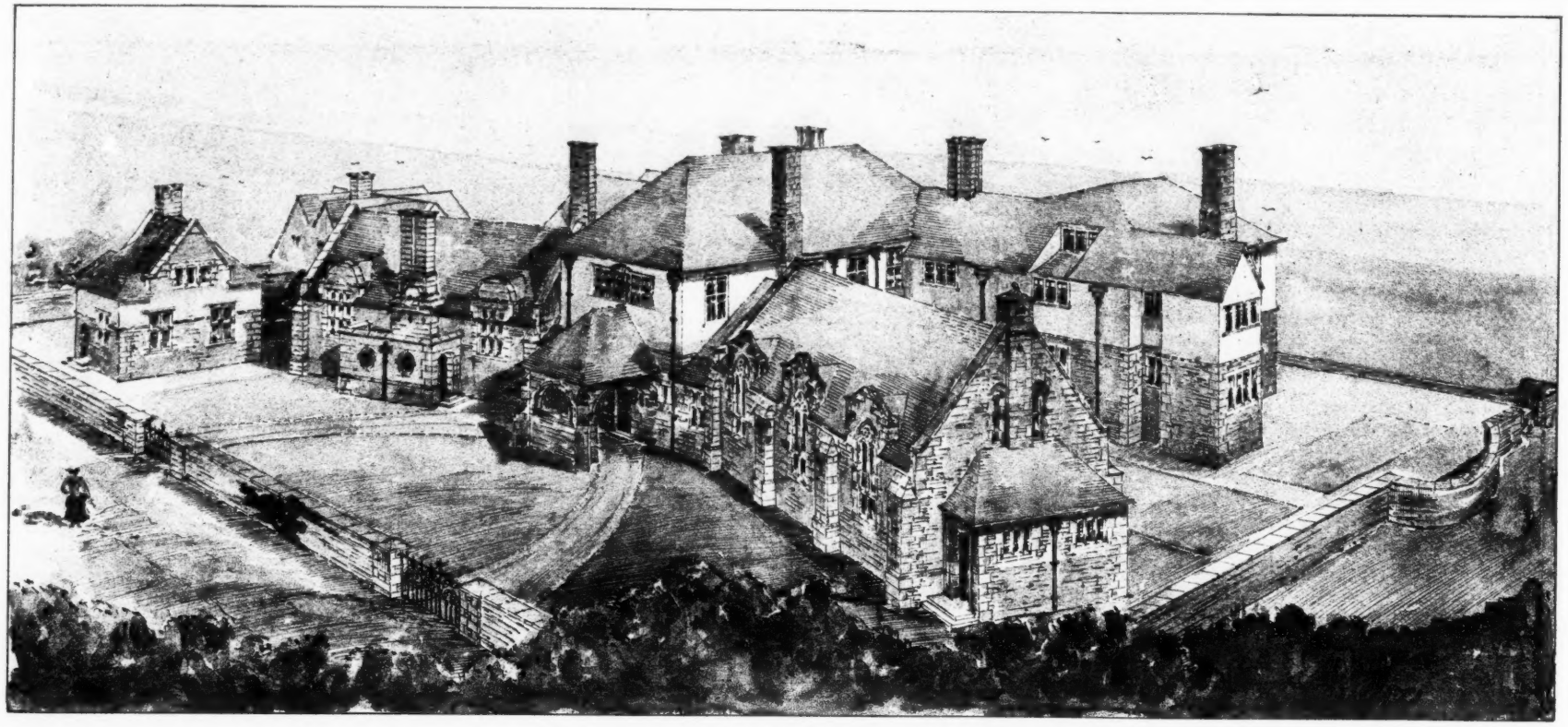

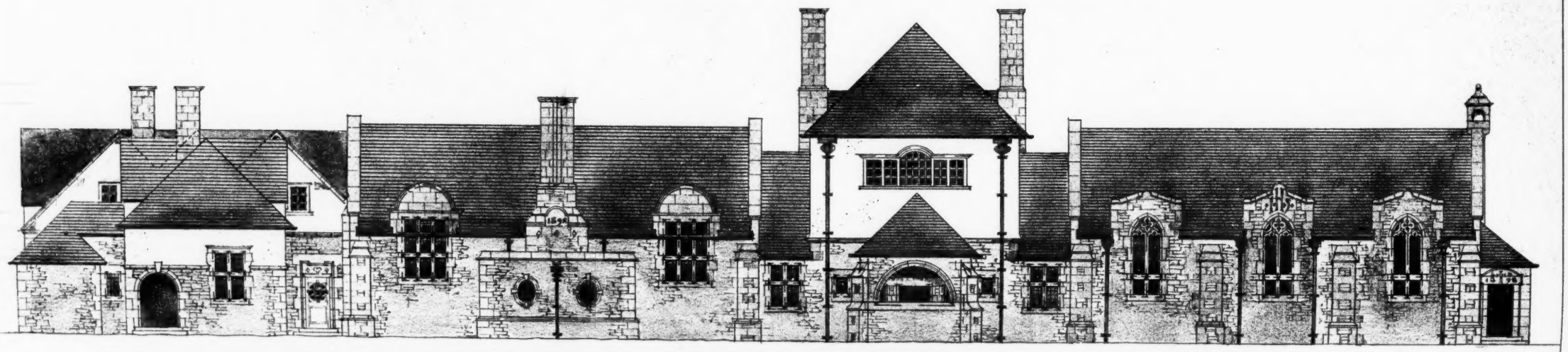

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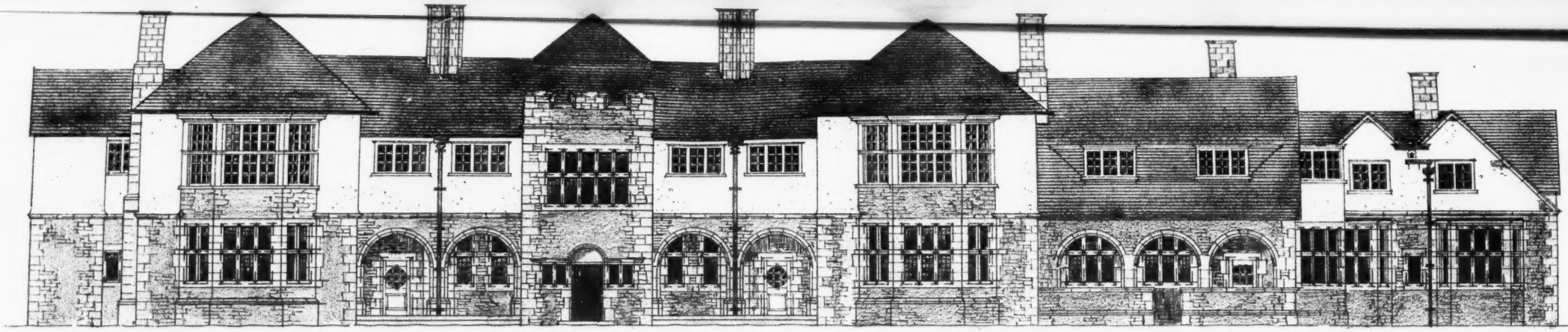

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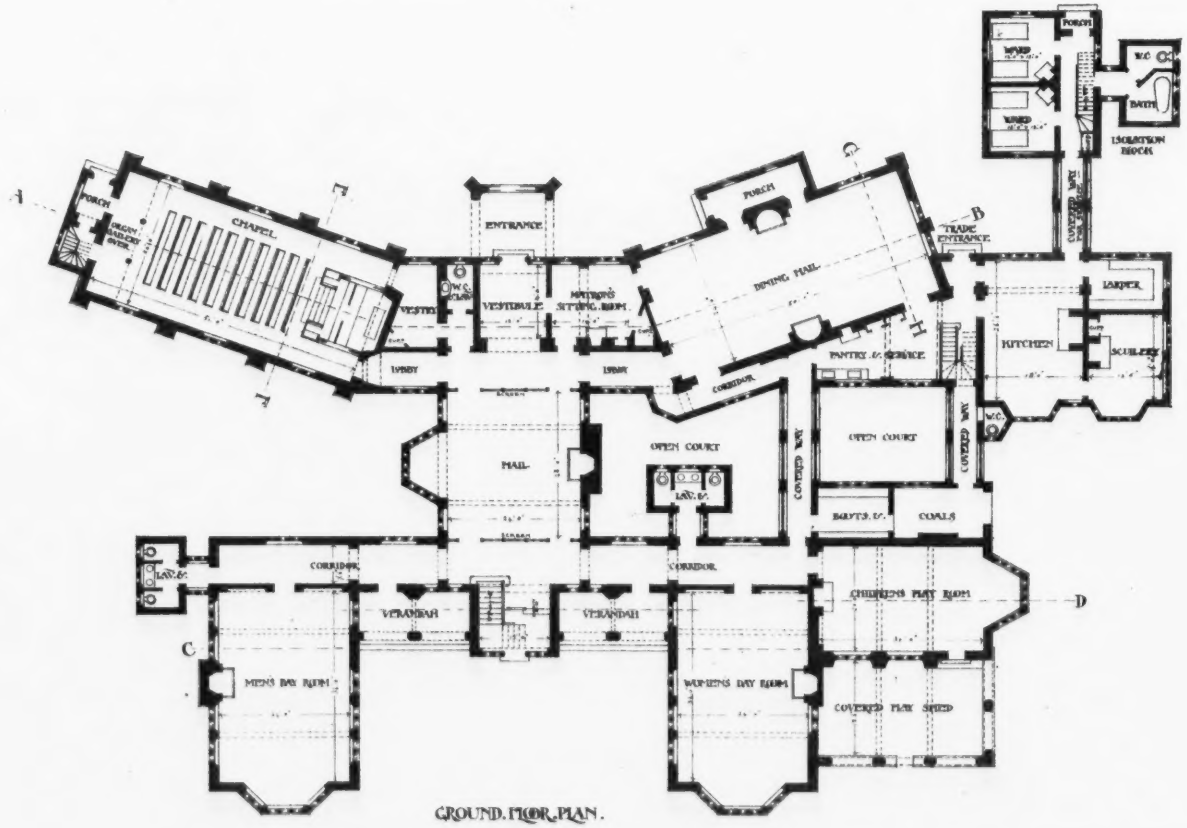

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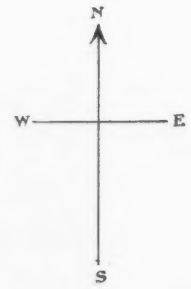

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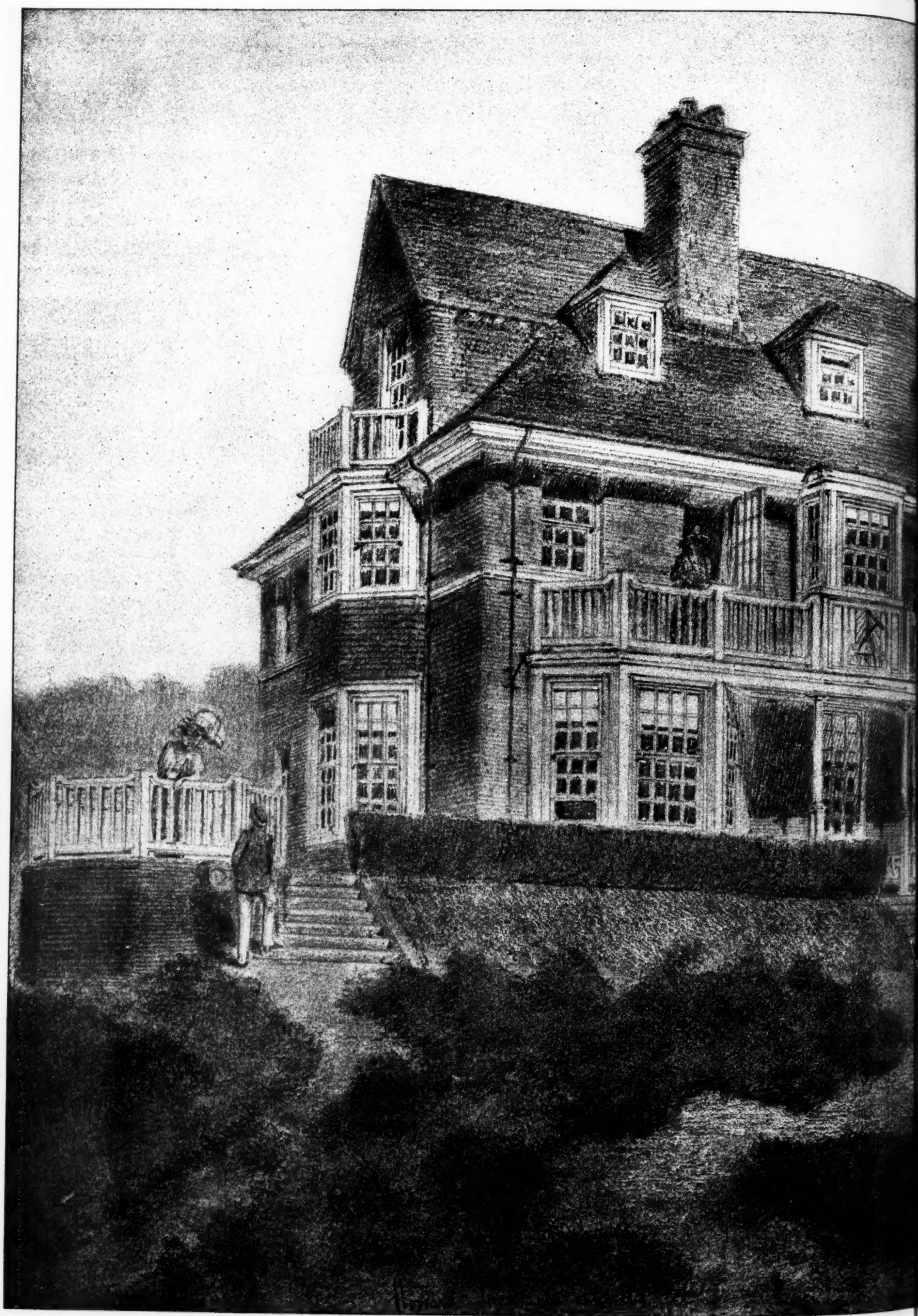

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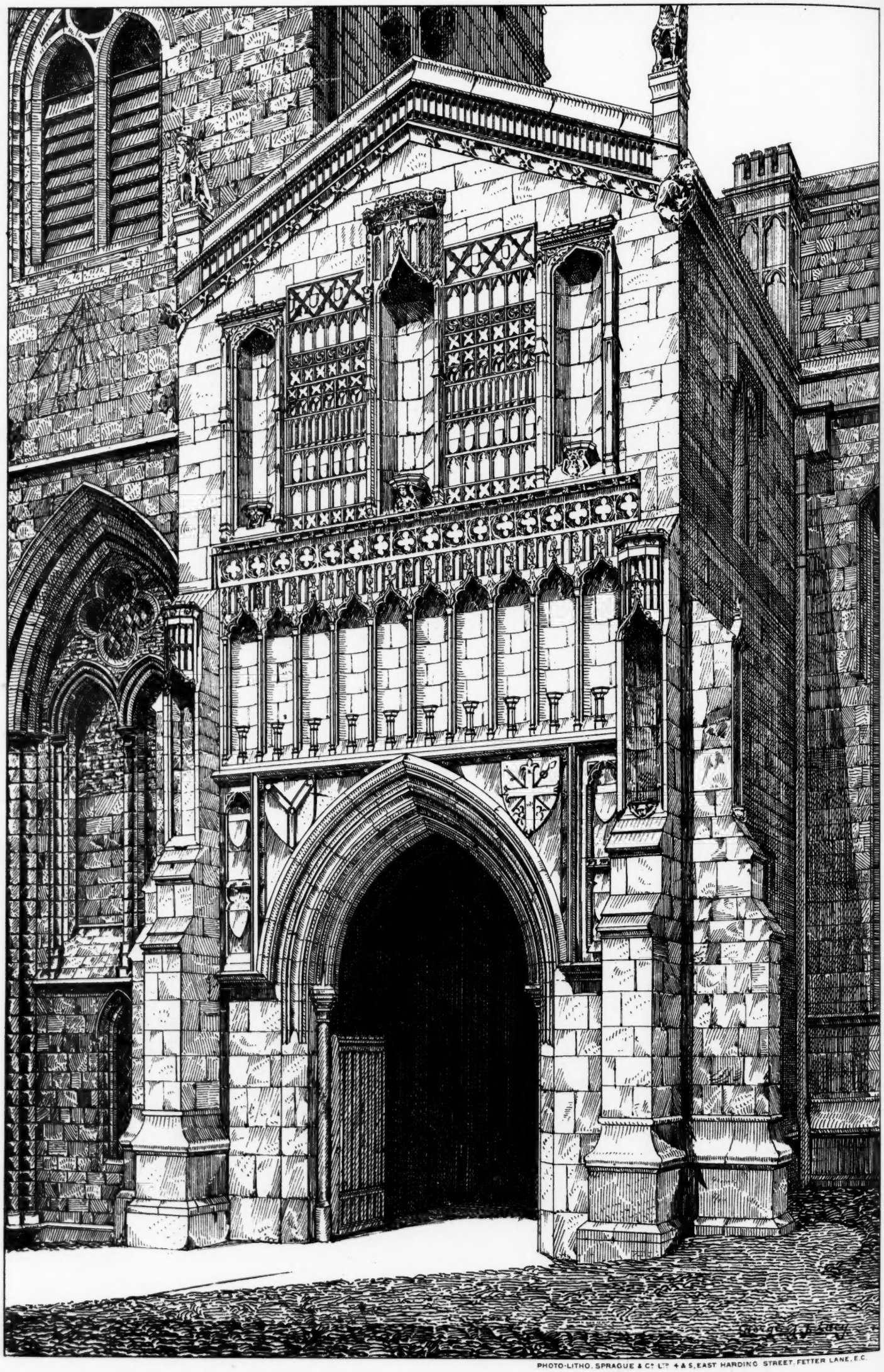

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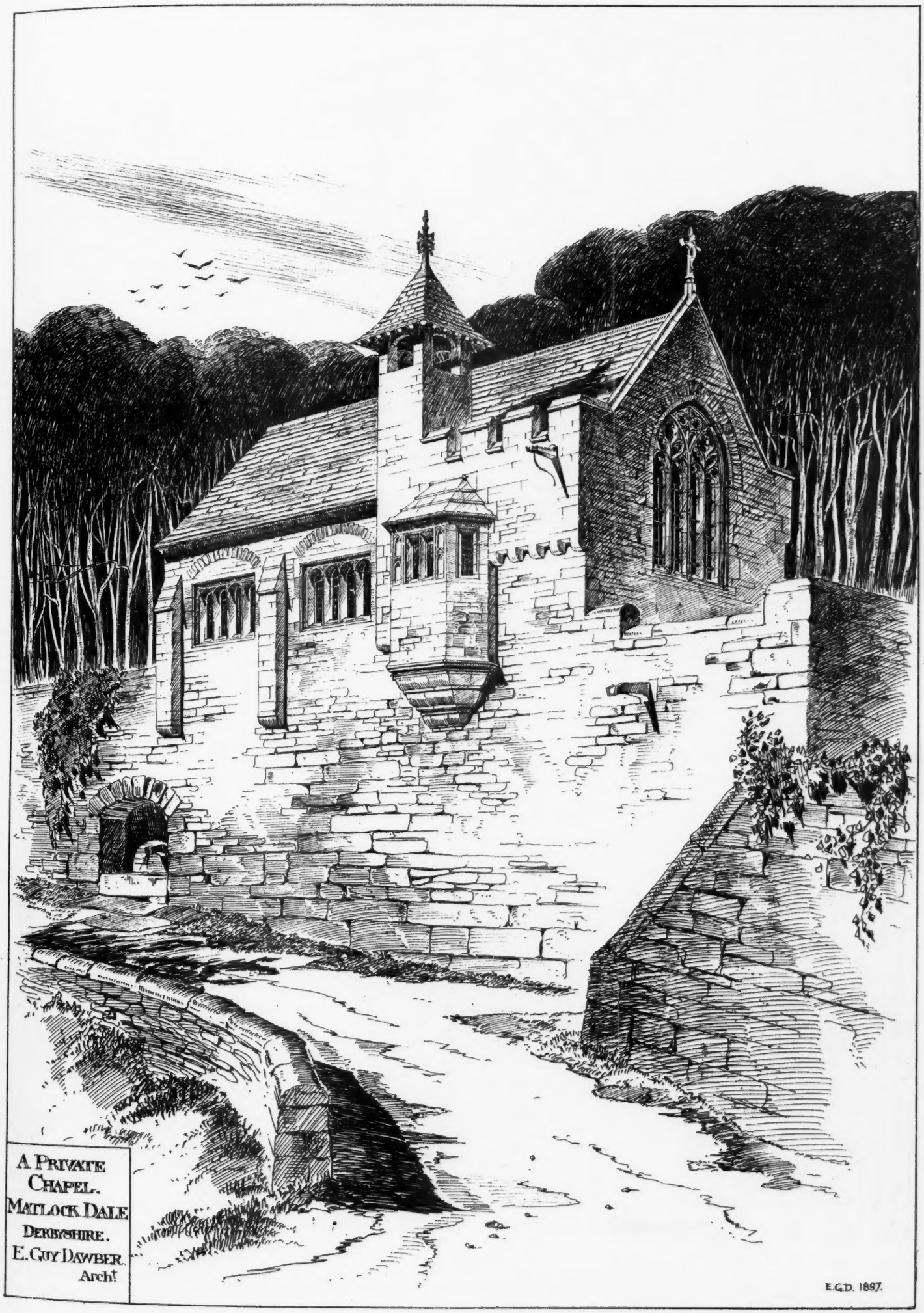
SOUTH PORCH OF ST. NICHOLAS, KING'S LYNN, NORFOLK.—Drawn by Mr. George J. J. Lacy.



A PRIVATE CHAPEL. MATLOCK DALE DERBYSHIRE. E. GUY DAWBER. Archt

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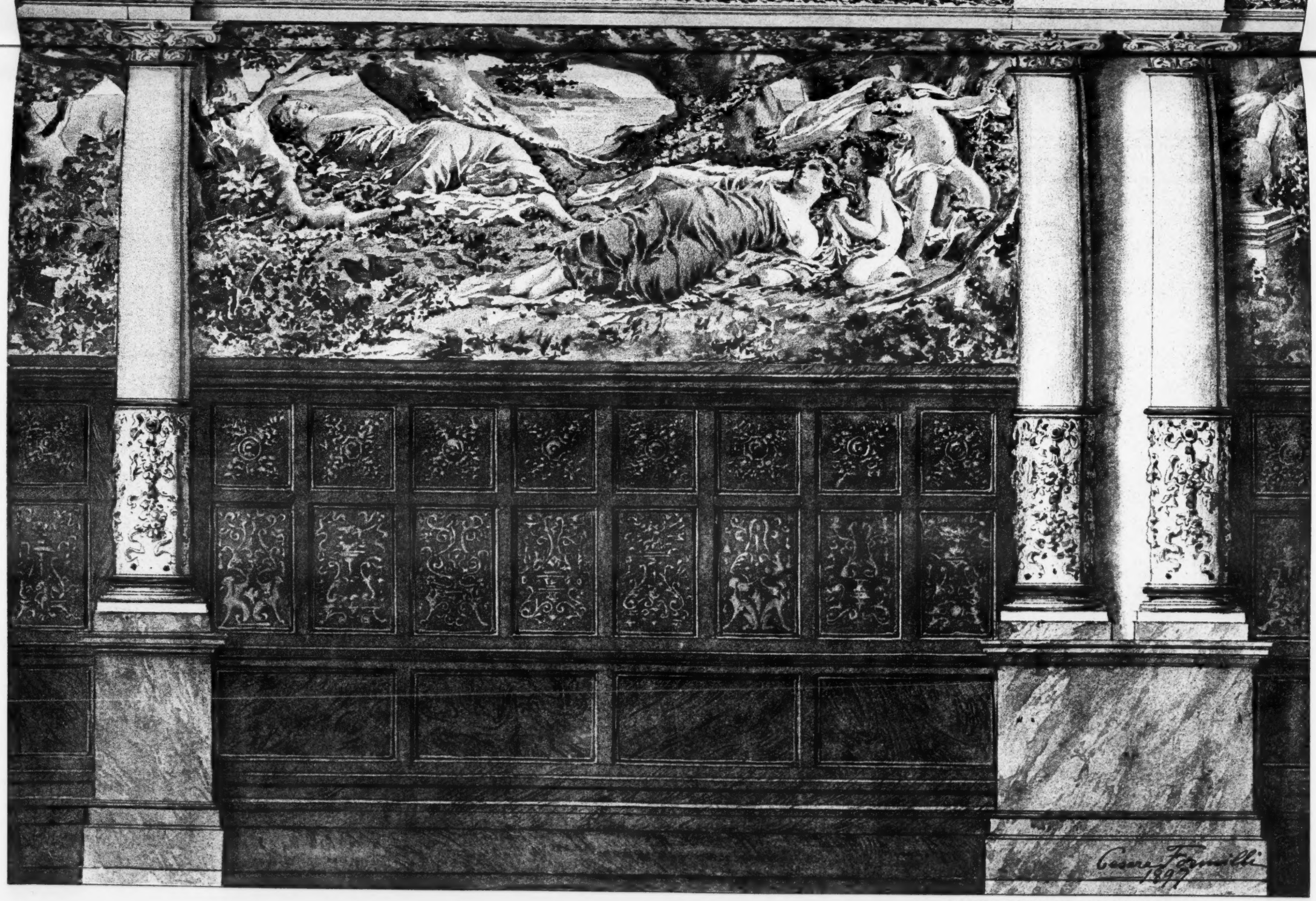
DESIGN FOR THE
DECORATION OF A ROOM
AT WALSINGHAM HOUSE



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WALL AND CEILING DECORATION FOR ROOM AT WALSINGHAM HOUSE.—By Mr. Cesare Formilli.

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